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Fifty-third Annual Session, Norfolk, Va., October, 1922

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WHOLE No. 841

RICHMOND, VA., JULY, 1922

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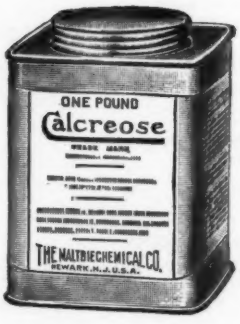

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Original Communications

PRIMARY CARCINOMA OF THE GALL BLADDER.*

By STEPHEN H. WAITS, M. D., F. A. C. S., University, Va.
Professor of Surgery, University of Virginia.

Primary carcinoma of the gall-bladder is by no means an uncommon disease. From September 1, 1907, to October 15, 1921, 525 operations have been performed at the University of Virginia Hospital for various affections of the gall-bladder and biliary passages and in that number twenty cases of primary cancer of the gall-bladder were encountered, a percentage of 3.8.

The disease is much more common in women than in men, as is also true of gall stones, the ratio usually being given as four or five to one, but in our series of twenty cases there were eighteen women and two men, a ratio of nine to one. It is especially prevalent in advanced life, the average age in the 268 cases collected by Fütterer being fifty-eight years, while in our own series the average was fifty-seven years. One of our cases was a young woman of only thirty-five years and the disease progressed rapidly to a fatal termination.

The association of gall stones with primary carcinoma of the gall-bladder is very striking. In our twenty cases diagnosed primary carcinoma at operation, stones were demonstrated in ten cases or fifty per cent., but it should be remembered that in many of these cases the gall-bladder was so involved in growth that stones could not be demonstrated, even though present. Careful investigations of others seem to show that gall stones are associated with primary cancer of the gall-bladder in seventy to ninety-five per cent. of cases.

*Read by title before the Medical Society of Virginia, at Lynchburg, October, 1921.

As regards the etiology of primary carcinoma of the gall-bladder I believe most observers think the chronic irritation produced by the gall stones is the chief factor. Others have considered the gall stones to be secondary to the cancer but this is probably disproved by the fact that gall stones are rarely found with secondary carcinoma of the gall-bladder. Still others, who adhere to the infectious origin of cancer, maintain that the pathological conditions of the epithelium lining the gall-bladder increase its vulnerability to the microparasite of cancer.

The observation of MacCarty on the early changes in the walls of chronically inflamed gall-bladders with and without stones are of great interest. In 1915 he reported eighty-five cases of papilloma of the gall-bladder out of 2,168 gall-bladders which had been examined and made the following comments:

"In all cases the mucosa was intact. The papillomata vary from twice to five or six times the length of normal villi. They are usually pedunculated, frequently racemose, and usually white or yellow. They appear in any portion of the organ, being confined neither to the neck nor the fundus."

"Upon microscopic section they appear to be hypertrophic villi, the tissue elements of which present an hyperplastic condition. The connective tissue and glandular tissues are greatly increased, the latter being so distorted that sections cut the glands in many different planes. The epithelium of the glands is hypertrophic and occasionally hyperplastic, and practically always completely covers the growth. In the stroma one finds large round or oval cells which contain fat or some fatty substance, this condition probably being responsible for the yellowish gross appearance of the growths. In no case were there any signs of early carcinoma, although similar hypertrophic conditions of the villi have been

seen in association with carcinomatous outgrowths of the gall-bladder."

"It is quite possible, in the light of recently discovered facts relative to the stages of epithelial hyperplasia from chronic irritation, that these fibro-epithelial proliferations might also present the stages which are apparently a part of a cytological reaction, which ends in a malignant condition."

commonly called dyspepsia but which careful inquiry would show to be really chronic cholecystitis while in other cases there is a more or less definite history of antecedent gall stones. The insidious and comparatively painless nature of the disease is illustrated by several of our advanced cases.

When the disease is so advanced that a hard irregular mass in the gall-bladder region, per-

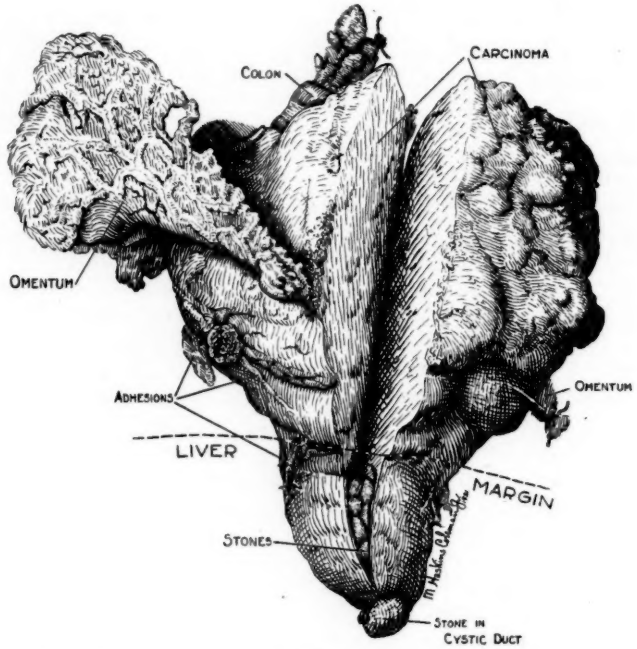


Fig. 1. Case I. Carcinoma of Gall-Bladder, Superior View (full size.)

Cancer arises in any part of the mucous membrane of the gall-bladder and may project into its cavity as an exuberant fungating growth or infiltrate its walls and spread directly into the liver. Some pathologists try to distinguish between carcinoma arising in the surface epithelium of the gall-bladder and that from the mucous glands. Microscopically, the disease may present the picture of adenocarcinoma, solid-celled carcinoma, or, in rare instances, of squamous-celled carcinoma with cell nests.

Like malignant disease of other abdominal viscera, early carcinoma of the gall-bladder is practically painless and symptomless; therefore early clinical diagnosis is rarely possible. Some patients complain for years of what is

haps associated with an enlarged liver and jaundice, makes the diagnosis very probable, surgery has little to offer, though it has been our custom to give these patients the benefit of the doubt and to explore. We must, however, bear in mind that operation in such cases may injure the cause of gall-bladder surgery and the surgery of cancer in general.

I believe there have been very few permanent cures of carcinoma of the gall-bladder in which the true nature of the disease could be recognized macroscopically at operation. The cases which have been cured are usually those in which carcinoma has been discovered in the routine laboratory examination of extirpated gall-bladders. Our chief hope for the future, therefore, lies in the early diagnosis of gall-

bladder lesions and the removal of diseased gall-bladders.

One of my cases illustrates this point very well. This patient was operated upon in June, 1909, for gall stones. A thickened rather acutely inflamed gall-bladder was found and the gall-bladder was merely drained after removing the stones. She returned to the hospital in April, 1910, with carcinoma involving the abdominal scar and the fundus of the gall-bladder. The gall-bladder and growth in the abdominal wall were removed but the patient ultimately succumbed. At the present time, such a gall-bladder, even though acutely inflamed, would probably be removed at the primary operation.

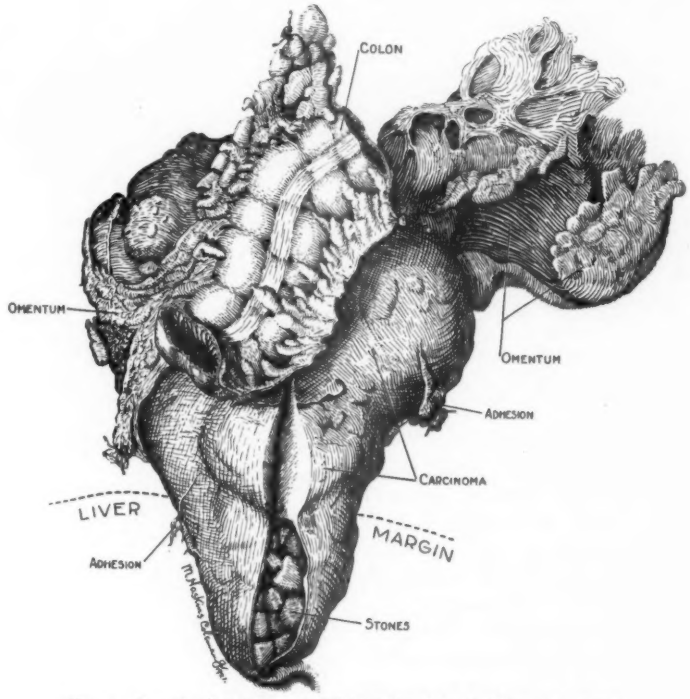


Fig. 2. Case I. Carcinoma of Gall-Bladder, Inferior View (full size.)

Below are reported in some detail the cases from which the accompanying drawings were made.

Case I.—Mrs. R. A., white, aged fifty years, was admitted to the hospital May 14, 1920, complaining of pain in the back and right side.

Family History.—Unimportant except that she has had eleven children.

Past History.—Has had measles, mumps and whooping cough but no other acute infectious diseases. Gastro-intestinal history negative before onset of present illness.

Present Illness.—Began one year ago with sudden cramp-like pain in the gall-bladder region and right back, nausea and vomiting. Attack lasted about thirty-six hours. Since then there has been a tired feeling in the back and tenderness below the right costal margin. Appetite fairly good for past year but worse in last four months. At present, no actual pain, but "indigestion" and tenderneess. Has lost about twenty pounds. No jaundice.

Examination.—Patient is a rather stout woman. General condition fairly good. Temperature normal. No jaundice. In the gall-bladder region a mass the size of a small grapefruit can be felt. It is generally rounded but somewhat irregular in shape, descends on inspiration. Liver not enlarged. Patient was thought to have hydrops of gall-bladder, possibly malignant owing to irregularity noted above.

Operation.—(May 17, 1920.) Mass proved

to be a very large carcinoma of the fundus of the gall-bladder, over which the omentum was adherent and to the lower side of which the transverse colon was firmly attached. Careful examination showed no involvement of the liver and no enlarged glands could be felt. Since that portion of the gall-bladder adjacent to the liver seemed uninvolved, it was decided to do a radical operation, removing gall-bladder, adherent omentum and section of transverse colon. Examination of the specimen (Figs. 1 and 2), showed a very large carcinoma of the gall-bladder and numerous gall stones.

Post-operative Course.—The wound healed slowly and patient left hospital on July 7th. apparently in good condition; however, she died three months later with a massive local recurrence.

Case II.—Mrs. A. H., white, aged thirty-five years, was admitted to the hospital November 26, 1920, complaining of gall stones.

Family History.—Unimportant.

Past History.—Has had measles, whooping cough, chicken-pox and pneumonia. No typhoid. Appetite is generally poor and she suffers with chronic constipation but has had no particular indigestion. She has four children.

Present Illness.—About three months ago she noticed a slight tenderness and uncomfortable feeling in the right side below the costal margin and also in the right lower quadrant. There were no other symptoms. She came to the hospital and physical examination was negative with the exception of slight tenderness in gall-bladder region. Gall-bladder trouble was suspected but operation was not urged and patient went home. The discomfort continued and soon she began to have rather marked pain which radiated to the back but not to the right shoulder. Pain finally became so bad that she returned to the hospital. For past two months has spent most of her time in bed. Never vomited until a few days ago. Has never been jaundiced.

Examination.—Patient is a well nourished woman; is suffering acutely. She is rather anemic but not jaundiced. Temperature 103; leucocytes 18,400. There is marked tenderness and some rigidity in the gall-bladder region and a tender rather hard mass the size of an egg can be felt here. It was thought that the patient had an empyema of the gall-bladder.

Operation.—(November 26, 1920.) The mass mentioned above proved to be the gall-bladder which was very hard and suggested carcinoma. The edge of the liver where the gall-bladder was attached seemed to be involved in the growth. The surrounding omentum was tightly adherent to the mass as were the transverse colon and duodenum. These adhesions were separated with some difficulty. It was then found that about one-half of the gall-bladder was involved in the growth, namely the fundal portion, whereas the rest of the gall bladder was distended with fluid. Further search showed a hard gland 2 cm. in diameter at the junction of the cystic and common ducts, apparently occluding the cystic duct. Other small hard glands were felt along the common duct. That portion of the gall-bladder involved in the growth (Fig. 3) along with the edge of the liver was excised. The gall-bladder, which contained purulent fluid and one gall stone, was drained.

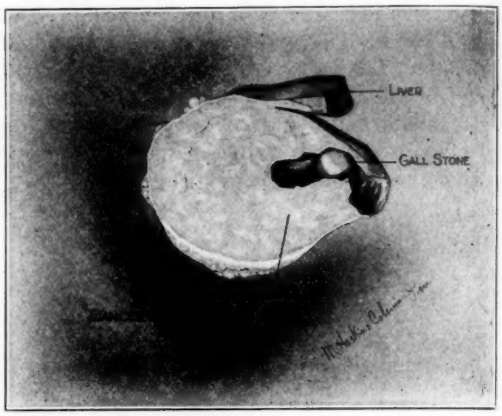


Fig. 3. Case II.

Post-operative Course.—Patient suffered greatly with pain in her back after operation. She was given one application of radium in gall-bladder. Was discharged from hospital on December 20, 1920, and died February 7, 1921.

Case III.—Mrs. M. M., white, aged sixty-six years, was admitted to the hospital December

4, 1920, complaining of pain and a lump in abdomen.

Family History.—Patient has had whooping cough, typhoid and malarial fever. She has often had gas on the stomach and suffered with colicky pains after indiscretions in diet. She has had 7 children.

Present Illness.—Two years ago she had an attack of severe pain in the right hypochondrium radiating to the back and accompanied by nausea and vomiting. At about the same time she noticed a small mass in the gall-bladder region. She has had frequent attacks of this character during the past two years, gradually increasing in severity and frequency. The mass has increased in size, more rapidly in the last six weeks. She has lost much weight.

Examination.—Patient is poorly nourished but pulse is good. Temperature normal. No jaundice. On abdominal examination a rounded, fairly smooth mass, the size of an orange, can be felt in the gall-bladder region below the edge of the enlarged, somewhat irregular liver, which extends 10 cm. below the costal margin in the nipple line.

The condition was considered most likely to be carcinoma of the liver and gall bladder but, in view of the fact that the patient was not jaundiced and did not go to pieces more rapidly, exploration was considered justifiable. This was refused and the patient went home. She returned January 4, 1921, requesting operation. There was still no jaundice, in fact very little change in her condition except that the mass was slightly larger.

Operation.—(January 19, 1921.) The liver was found to be very large, hard, and nodular, evidently due to carcinoma. The gall-bladder was greatly distended and its wall thickened. Wound closed.

Autopsy.—Patient died about 10 days after exploration. Autopsy revealed extensive carcinoma of gall-bladder with gall stones, and widespread invasion of liver (Fig. 4).

Case IV.—Mr. S. P., white, aged sixty-three years, was admitted to the hospital January 19, 1921, complaining of uneasiness in the stomach.

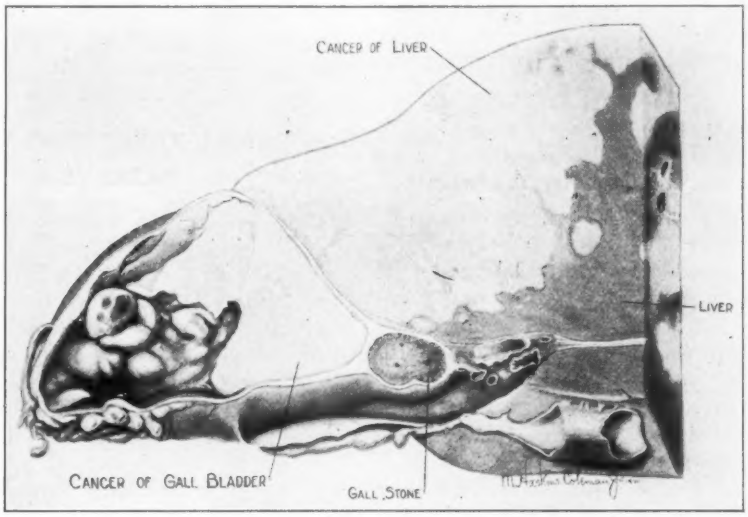


Fig. 1. Case III.

Family History.—One sister was explored in this hospital for primary carcinoma of the gall-bladder.

Past History.—Usual diseases of childhood. Pneumonia 20 years ago. No typhoid. Nine years ago had an attack of very acute pain in the right hypochondrium which caused him to faint. He was very sore below costal margin for several days. Has had no similar attack since then.

Present Illness.—Began about four weeks ago with uncomfortable feeling in stomach. There has been no sharp pain, no vomiting,

but some soreness in gall-bladder region on deep pressure.

EXAMINATION.—General condition is good but patient has evidently lost some weight. Temperature normal. No jaundice. Abdominal examination negative except for slight tenderness in gall-bladder region. A diagnosis of gall-bladder trouble was made and operation advised but patient decided to go home for a while before having operation performed.

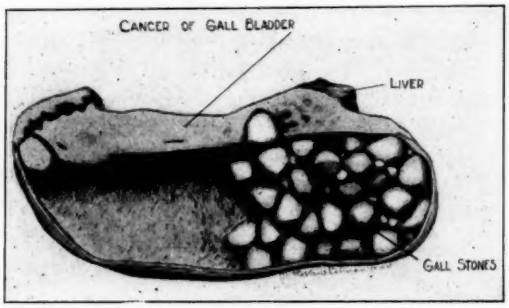


Fig. 5. Case IV.

He returned to the hospital on February 27, 1921. Since leaving the hospital his appetite has been poor and he has lost considerable weight. He has not been confined to bed but has spent considerable time in bed. Has had no actual pain but a full sensation in gall-bladder region. Has had no nausea nor vomiting. No chills nor fever. Three days ago he became deeply jaundiced. Temperature is normal. A definite, tender mass can now be felt in the region of the gall-bladder which descends on inspiration and the liver edge can also be felt 2 cm. below the costal margin. No nodules felt in liver. Carcinoma was strongly suspected.

OPERATION.—(Feb. 28, 1921). Liver was enlarged, probably due to engorgement with bile, but no nodules were seen or felt in it. The gall-bladder was distended and its lower portion near the cystic duct felt thick and firm, suggesting carcinoma. The gall-bladder was aspirated and a considerable amount of purulent bile removed. Cultures were taken and later proved to be sterile. Numerous stones were found. The presence of pus and stones, and the numerous adhesions about the gall-bladder made us hope that the condition might be inflammatory; therefore adhesions were separated and gall-bladder removed with some difficulty. After removal it was found that the lining of the gall-bladder was every where fairly smooth, apparently denuded of its mucosa but there was no definite suggestion of carcinoma in the lining. The chief thickening of the gall-bladder was on the side of the liver attachment and measured nearly 1 cm. in thickness (Fig. 5). On cutting into this area the tissue was very suggestive of carcinoma and frozen sections proved it to be such. The tissues about the common duct were very hard and friable, doubtless cancerous and occluding the duct.

POST-OPERATIVE COURSE.—Bile discharged freely after drains were removed and patient grew weaker. He was taken home on March 16, 1921, and died two weeks later of virulent facial erysipelas.

SURGICAL TREATMENT OF FACIAL PARALYSIS.*

By C. C. COLEMAN, M. D., F. A. C. S., Richmond, Va. Department Neuro-Surgery, Hospital Division, Medical College of Virginia.

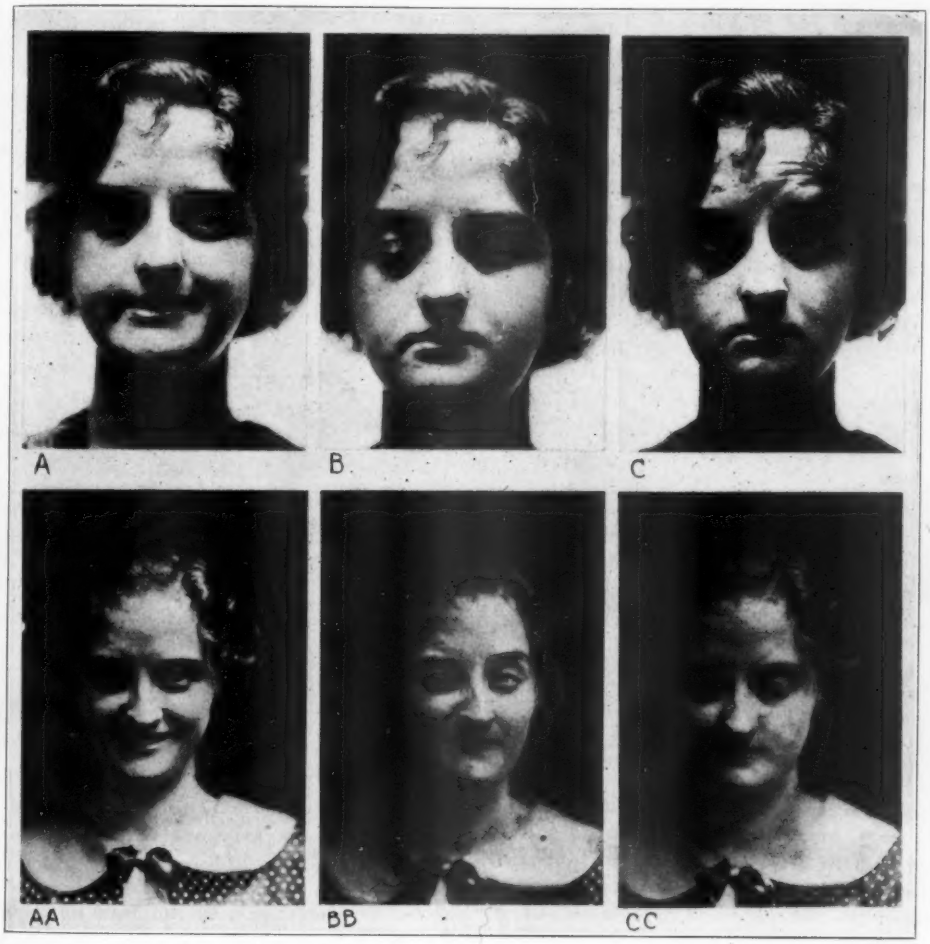
Surgery of the cranial nerves is limited almost entirely to destructive operations upon the trigeminal, for severe neuralgia, and to suture or fusion of a permanently interrupted facial nerve for the relief of a conspicuous deformity caused by paralysis of the muscles of expression of one-half of the face.

Whatever the functional disability which may result from severe injury of the facial nerve, the chief concern of the patient is the serious alteration in his facial appearance and expression. The deformity, while always considerable, varies in different people, and, as a rule, is more pronounced in the old than in the young. The response of the muscles of the unaffected side to any emotional stimulus gives prominence to the deformity, so that rigid repression of all facial movement is likely to become a fixed habit.

The most common types of facial paralysis result from disease or injury of that segment of the facial trunk which is enclosed in bone. The cases due to infection or compression of the nerve, and known as Bell's

*Read before the Southern Surgical Association, December 16, 1921, Pinehurst, N. C.

palsy, usually recover more or less completely, within a few weeks or months, and require surgical treatment only when regeneration of the nerve is unduly delayed, or manifestly impossible. Disease or injury of the facial tract above the nucleus of the nerve may produce paralysis of the lower face, but this form of paralysis is not important as an independent surgical lesion. The nerve may be injured in its course through the parotid



Case No. 1.—Complete paralysis of right facial nerve, involving all branches except the depressors of the angle of the mouth, the platysma, stylohoid and digastric. The paralysis was caused by division of the branches in the parotid gland, by a fragment of glass. Operation five weeks later. Direct suture of divided branches. Trunk of nerve first exposed, and identified by application of faradic electrode, proximal to entrance into the parotid, and traced forward through dense scar tissue, to the site of the injury, which was about one-fourth inch distal to the pes. Four small branches had been completely divided by the fragment of glass. The identification of the peripheral segments of these divided branches required a long, tedious dissection, because of the scar tissue and the minute size of these branches. The branches were sutured with fine silk. The identification of the peripheral segments of two of the branches was doubtful.

(A) The absence of levator action of the right side of the mouth is apparent. There is only slight deviation of the mouth due to the preservation of function of the lower branch of the facial, which was not divided.

(B) Inability to close the eye of the paralyzed side.

(C) Loss of movement in the occipitofrontalis of the right side.

Lower series of photographs, seven and a half months after suture of the branches of the nerve.

(AA) Note the restoration of levator action with return of the nasolabial fold of the right side. There is no asymmetry of the face. The palpebral fissures are of equal width.

(BB) Movement of right side of face. Note the active movement of the orbicularis palpebrarum. Movement of the occipitofrontalis is beginning, (not shown in photograph) and is well advanced in the right corrugator supercilii. The patient is beginning to dissociate movements of the muscle groups.

(CC) The patient closes the eye of the right side without mass movement.

The course of recovery after direct suture of the nerve is very similar to that of spontaneous recovery following severe Bell's palsy, in which mass movements may persist for some time.

gland, and one or more branches may be divided in, or distal to, this location. Such cases are usually unfavorable for operative procedure upon the nerve itself unless a direct suture is done promptly.

Injury of the nerve during mastoid operations is responsible for most of the cases of permanent paralysis in civil life. This does not appear to be a very frequent accident, but statistics on this phase of the subject are difficult to obtain. It is not of practical importance to speculate on the type of damage which the nerve sometimes receives as a result of operations upon the mastoid. A progressive infection of the nerve may be superimposed upon a direct injury in some of these cases, thus converting a partial lesion, with recoverable tendencies, into a permanent obstruction to regeneration. Perhaps, injury to the facial nerve might often be avoided in radical mastoid operations, by the application of a small faradic electrode to tissues of doubtful identification, which lie about the usual location of the nerve. Faradic identification of the motor root of the trigeminal is an accepted procedure in operations upon the central root of the gasserian ganglion, and the local conditions in operations upon the mastoid, or in parotid tumor removal, do not appear less favorable to the employment of this measure as a protection to the facial nerve. The prodding of motor nerves, or pinching with forceps, for the purpose of identification, is a crude and unreliable procedure.

The prognosis of severe facial paralysis, following either trauma or infection, must generally wait upon the intervention of a more or less indefinite period, during which time repeated clinical examinations should be made to determine the progress or absence of regeneration.

The indications for operation in a large majority of cases rest entirely upon a reasonable doubt of the probability of spontaneous recovery. Certain exceptions to delayed operations are obvious. Stab wounds followed by immediate paralysis should invariably be explored within twenty-four hours, and the nerve suitably treated, provided the patient's general condition admits of operation. If promptly explored, the distal segments of the nerve may be found by searching the tissues with a faradic electrode.

In some of the cases complicating mastoid operation, recovery may set in after two months, and progress to entire restoration of function. Severe Bell's palsy may be tardy in showing signs of regeneration, and it seems best to allow a very generous period of time for spontaneous regeneration. It is often impossible in these cases to approximate closely the level of the nerve involvement, and the length of time required for recovery will depend upon the distance the regenerating axis cylinders must travel to reach the paralyzed muscles. When the nerve is paralyzed by direct trauma, during a mastoid operation, the approximate level of the injury is known, and, if the lesion is a favorable one, signs of recovery should appear in two or three months, in accordance with the rate of unobstructed nerve regeneration. The superiority of spontaneous regeneration to the function obtained by fusion operations, and the impossibility of performing a direct suture in the large majority of facial nerve injuries, naturally foster a conservative attitude in dealing with cases of facial paralysis.

Case No. 2.—Complete right facial paraylsis following lesion of the nerve in the bony canal. Photograph three weeks after onset. Spontaneous improvement began in six weeks after onset, and complete recovery took place within six months. Prognosis of probable spontaneous recovery. was based on condenser tests.

It is not a simple matter to obtain information by exploration in these cases, as may be done with peripheral nerve injuries, where the nerve may be exposed and appropriate operative measures employed. If, on the other hand, operation is unduly delayed, degenerative changes in the paralyzed muscles may greatly impair the functional end results. In

the cases upon which we have operated, recovery of muscle function has been less complete in the orbicularis oris than in the other muscle groups. It may be that the delicate fasciculi which comprise this muscle degenerate earlier and more extensively than some of the other muscles of expression. A similar

fusion operation for facial paralysis. This delay seems justifiable in the cases due to infection or compression (Bell's palsy), but we believe that the traumatic cases should be operated upon at the end of the third month, if there are no signs of regeneration upon careful clinical examination and electrical

Case No. 3.—Facio-hypoglossal fusion for permanent paralysis of the right facial, following lesion of the nerve in the bony canal.

The upper row of photographs shows various aspects of the deformity before fusion operation.

(A) Note the deformity with face in repose.

(B) Inability to close eye on the paralyzed side.

(C) Emigration of the mouth to the healthy side during effort to make bilateral exposure of the teeth. The immobility of the right side is clearly shown.

(E) Support of the paralyzed side by an adhesive strip (Frazier). Note the correction of the deviation of the lower face to the left, and the narrowing of the palpebral fissure of the paralyzed side by the upper pull of the adhesive.

Lower series of photographs, eight months after facio-hypoglossal fusion.

(AA) Face in repose. The deformity shown in (A) has disappeared. Note the equal width of the palpebral fissures on the two sides.

(BB) The patient closes both eyes without a mass movement. There is still some weakness of the right orbicularis palpebrarum when the eye is closed, without associated movement of the lower face.

(D) Appearance of tongue after section of the hypoglossal. Note marked deviation to the right, and atrophy. This causes no interference with speech.

(F) Movement of the previously paralyzed side. There is some evidence of mass movement in the effort, but the patient was later able to overcome this satisfactorily.

situation probably exists in the degeneration of the intrinsic hand muscles, and imperfect recovery following ulnar nerve division, with delayed suture.

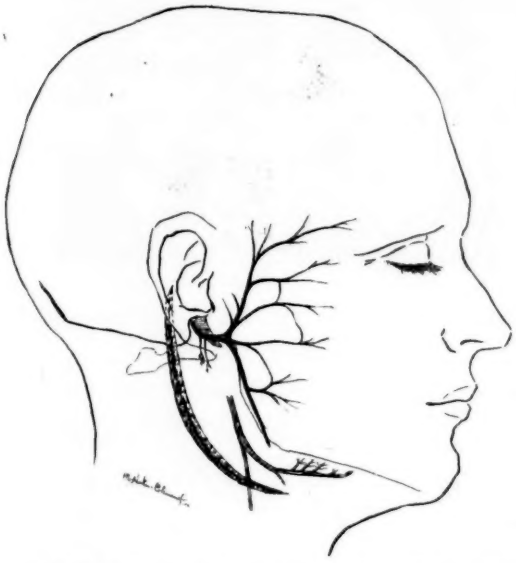
We have followed the suggestion of Ballance, and waited six months before doing a

tests. The question is sometimes raised as to the advisability of fusion of the facial, in cases of paralysis of many years' duration, or when recovery has been incomplete, and there is deviation of the mouth or inability to close the eye. If complete degeneration of the mus-

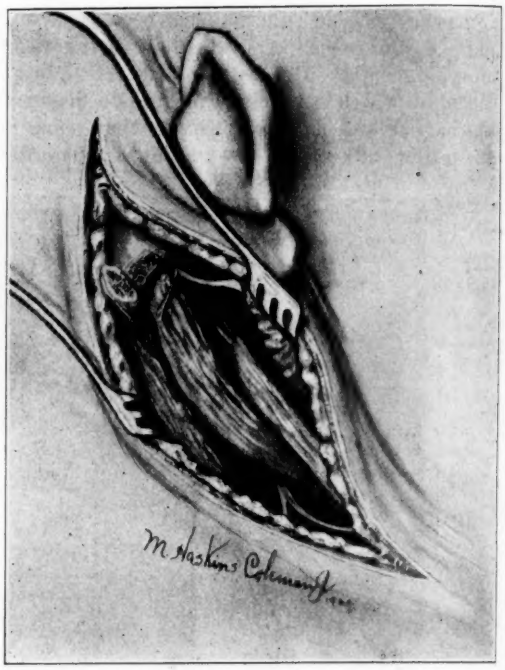
cles has not taken place, most surgeons who are interested in nerve operations would probably favor operation in the belief that a certain amount of benefit might be expected from the operation. When one or two of the main branches of the nerve have failed to regenerate because of the lesion of the trunk, the propriety of operation might be determined to some extent by the patient's concern about the deformity. Fortunately, regeneration, if it takes place at all, is usually fairly complete in all of the main branches.

The mechanical treatment of patients with facial paralysis should not be neglected. Light facial massage, galvanic electricity, and adhesive splinting of the paralyzed side (Frazier), not only comfort the patient, but give actual help. (Cace 3, E).

Operation upon the facial nerve for paralysis, except in rare cases of direct suture of the trunk, substitutes the hypoglossal or spinal accessory for the central segment of the facial, thus restoring the connection between the cortical centers and the paralyzed facial muscles. The value of this type of nerve fusion cannot be questioned if the operation is well conducted in suitable cases.



Facio Hypoglossal Fusion. Fig. 1.—Curved incision beginning above tip of mastoid and following skin crease parallel to the lower border of the mandible. Facial nerve shown in heavy black, with two small branches from main trunk to digastric. Note segment of hypoglossal parallel to ascending ramus of jaw.



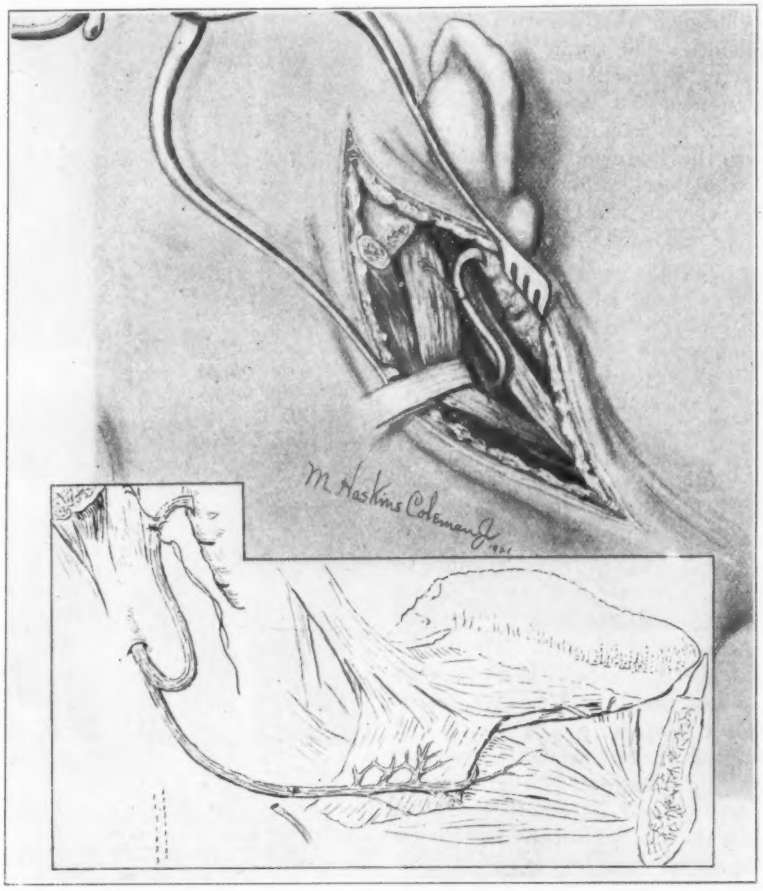
Facio-Hypoglossal Fusion. Fig. 2.—Retraction of the sternomastoid backward for better exposure of the digastric fossa, accomplished by chipping off the tip of the mastoid, carrying with it the attachment of the muscles. The small branches from the facial to the digastric are shown, and the facial trunk is seen entering the posterior border of the parotid gland. The facial trunk is divided peripheral to the point where the branches of the digastric break away, for reasons explained in the text. At the lower angle of the incision, the hypoglossal is seen dividing into the ansa and main branch to the tongue.

While no large series of well tabulated functional end results are available for comparison of facio-hypoglossal with facio-accessory fusion, we believe the hypoglossal should be preferred because of its functional similarity. The coarseness of spinal accessory movement, its wide anatomic and physiologic dissociation from ordinary facial expression, and the objectionable shoulder movements which may follow the anastomosis, have been frequently emphasized. Objection to the hypoglossal has been made by some, because it deforms the tongue, interferes with mastication, swallowing, and speech, and because it gives the most persistent and troublesome type of associated movements. The first two objections may be dismissed, because the deformity of the tongue is of no moment and, whatever interference with the function of the tongue there may be, immediately after section of one

hypoglossal nerve, soon disappears. Some patients seem to attribute the collection of food in the paralyzed cheek to the unilateral paralysis of the tongue. This inconvenience disappears with the resumption of buccinator function, to the loss of which it is mainly due. It is no doubt true that in some cases the associated movements of facio-hypoglossal anastomosis are obvious and persistent.

Facio-hypoglossal fusion may be very difficult if the extracranial segment of the trunk lies in scar tissue. The depth and protected position of the digastric fossa, the small size of the degenerated nerve, and the necessity for effective hemostasis, all combine to make the operation slow and tedious.

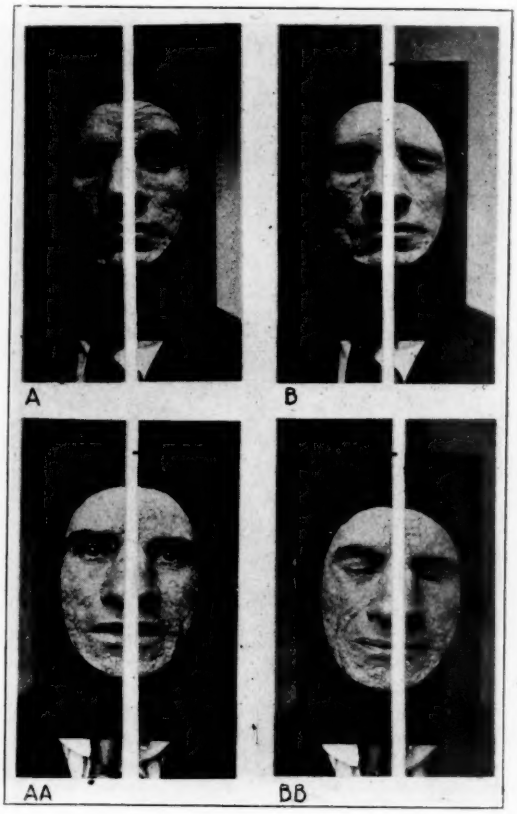
The skin-platysma incision usually begins above the tip of the mastoid and curves toward the angle of the jaw, following one of the skin creases parallel to the lower border of the mandible. (Fig. 1). The sternomastoid is retracted backward, and the tip of the mastoid process may be removed with its muscular attachment if necessary. (Fig. 2). The posterior belly of the digastric is exposed and held down with a small tape. The hypoglossal nerve may usually be seen at this stage of the operation, but it should not be disturbed



Facio-Hypoglossal Fusion. Fig. 3.—Digastric is held down by narrow wet tape. The main trunk of the hypoglossal has been sectioned far enough forward to permit approximation with the facial, without tension. When the digastric muscle is released, the site of the anastomosis lies between the digastric and stylohyoid muscles. Insert below shows the type of needle and suture used. The ansahypoglossi has been divided and removed from its course, which is indicated by the parallel dotted lines in the lower left hand corner of the insert. It is sutured into the main division of the nerve, as indicated.

until after the facial is divided. The guide to the facial is the small branch to the digastric muscle. With the digastric pulled down, this little branch is followed carefully upward and inward until the facial trunk is reached. We have found no other landmark so reliable in isolation of the facial trunk as the twig to the digastric, and this method of identification has greatly shortened the duration of the operative procedure. The trunk of the facial is stimulated with an electrode, and if unresponsive, it is divided just above its digastric branch. (Fig 3). No attempt is made to follow the nerve to the foramen. To section the nerve at this high level, often requires traction on the nerve, with more or less traumatism and delayed recovery. It seems best to save the nerve supply to the digastric, because this muscle stabilizes the base of the tongue on the paralyzed side.

The stylohyoid branch is apt to be destroyed whether the facial is divided at or below the foramen. The facial stump is protected with wet cotton, and the hypoglossal is then freed sufficiently close to the tongue to permit approximation to the facial without tension. The thyrohyoid branch of the hypoglossal must be sacrificed to allow the central segment of the hypoglossal to be carrid up to the facial. A fine silk suture is placed in the hypoglossal trunk distal to the point of section, before the nerve is divided. The union of the facial to the hypoglossal is made with arterial sutures and fine curved needles. Three or four epineural sutures are sufficient. The line of anastomosis rests between the digastric and stylohyoid muscles. If the digastric is carefuly handled, and its sheath is intact, adhesions about the line of suture should not be troublesome. The ansa hypoglossi is next divided sufficiently low to allow its central end to be joined to the distal stump of the main trunk of the hypoglossal. One penetrating suture of fine silk is used to unite these nerves. Drainage should be avoided in all nerve operations, and it is not required, provided oozing points have been carefully ligated with fine silk. The usual equipment for nerve surgery—small forceps, sharp knives, and fine needles and sutures,—are required for accurate apposition of these slender nerve trunks. No form of restraint is used on the head and shoulders after the operation. It is impossible for the patient to make tension on the anastomosis, provided the approximation of the nerve segments was accomplished without tension. The patient usually stays in the hospital about ten days, and leaves with a firm wound and inconspicuous scar.



Case No. 4.—Facio-Hypoglossal Fusion, for complete paralysis of six months' duration, following the lesion of the nerve in the bony canal. Effort to elevate the brow and close the eye of the paralyzed right side is shown in A and B. Although the lower facial muscles were completely paralyzed, the patient had only slight deformity with the face in repose. Condition shown in (AA) and (BB), nearly two years after facio-hypoglossal fusion. Facial expression is fairly evident in (AA). There is only slight asymmetry of the mouth in smiling.

(BB) Closing the eye of the paralyzed side is accomplished by associated movement of the face.

The first sign of returning function after anastomosis is shown by improvement in the tone of the paralyzed muscles, and this may be detected about seventy-five days after operation. The asymmetry of the face seems to be less marked, and palpation of the muscles indicates that the flabbiness is disappearing. Voluntary movement has usually first appeared, in my cases, at the angle of the mouth, and it

may be expected in three and a half months after operation, although, in one patient, the first contraction of the muscles was observed in the orbicularis palpebrarum on the 132nd day. Improvement is rapid from the first appearance of voluntary movement, until all of the important muscles, except the orbicularis oris and frontalis, show contraction. Recovery of these muscle groups, in my own experience, has been delayed and unsatisfactory. The recovery of voluntary movement is first expressed by co-ordinated mass contractions which involve all of the facial musculature of the affected side capable of response. Gradually, the groups of muscles acquire a dissociation of action, and isolated movements become possible, more quickly if the patient persists in intelligent effort at re-education of the confused neuro-muscular mechanism.

Case No. 5.—Facio-Hypoglossal Fusion for complete parlaysis right facial nerve of six months' duration, following lesion of the nerve in the bony canal.
(A) Face in repose. Note marked deviation of the mouth to left. This case had less sagging of the lower lid than cases No. 3 and 4, with greater deformity of the muscles of the lower face.
(B) Fifteen months after facio-hypoglossal fusion. Note contraction of the muscles of the previously paralyzed side, and the corrugations about the eye, indicating the action of the orbicularis palpebrarum.
(C) Face in repose. Note symmetrical appearance of the two sides of the face. The skin creases in the cheek of the previously paralyzed side are clearly shown. These creases, after recovery from facial paralysis, do not always follow the old lines.

The physiologic situation created by anastomosis of two motor cranial nerves has been subjected to much speculation, but little proof of the precise nature of readjustment of cortical function has been submitted to explain the so-called re-education of muscle groups, which is essential to isolated movements and facial expression. If the cortical centers for facial movement and expression continue to control the facial muscles through associational tracts connected with the tongue center, after the anastomosis of the two nerves, then the problem of re-education in these cases is more easily understood. It is difficult to believe, as some have pointed out, that the hypoglossal center acquires functions primarily residing in the facial area. Recovery of emotional expression is the most difficult achievement of operations for facial paralysis. It appears that this might be superimposed upon the accurate dissociation of the action of the muscle groups, and the latter may be accomplished by patient effort. We have seen one patient, operated upon more than two years, who closely imitates facial expression, but the effort lacks the ease and spontaneity of genuine emotional response.

There is very likely to be some permanent deviation of the mouth toward the unaffected side when the patient smiles, but this is not unusual in severe cases of facial paralysis which recover through regeneration of the nerve without operation. Moreover, mass movements of the face are not unknown after recovery from severe attacks of Bell's paralysis.

If simply the return of normal muscle power constituted the sole requirement of facio-hypoglossal anastomosis, as is largely true in tests for peripheral nerve recovery, fusion operations for facial paralysis would perhaps be among the most efficient of all operations upon motor nerves. Return of muscle power in the

facial muscles, however, is not an equivalent of complete return of function, although the restoration of movement is all that the new nerve-muscle mechanism alone can be expected to accomplish.

Complete function of the muscles of expression arises from the proper readjustment of the cortical areas represented by the fused nerves. However successful the fusion of the two nerves may be in restoring muscle contractility, the critical test of the results of the operation must be applied in terms of efficient readjustment of those higher centers, whose function is the production of facial expression.

503 *Professional Building.*

PROTEIN SENSITIZATION IN BRONCHIAL ASTHMA, HAY-FEVER, AND ALLIED CONDITIONS. WITH REPORT OF WRITER'S OWN CASE.*

By GRAFTON TYLER BROWN, M. D., Washington, D. C.

Although all of our practical working knowledge of anaphylaxis has been evolved in the last few years, I fully realize that in preparing a paper on protein sensitization I am not treading on virgin soil, as evidenced by the rapidly increasing literature on this subject.

General Considerations: Charles Richet, in 1902, injected a dog with some poison extracted from the tentacles of actiniae. This injection had no apparent harmful effect. Twenty-two days later he repeated the injection, using exactly the same dose, with the idea in mind of giving gradually increasing doses in the future, and thus producing a condition of prophylaxis in the dog to that particular poison. Much to his surprise, however, before he had hardly completed the injection, the dog was taken suddenly ill and died within thirty-five minutes. As this condition was the exact opposite of prophylaxis, he christened it anaphylaxis. In other words, the first dose had sensitized the dog to that particular poison, and the second dose caused sufficient shock to produce death.

Animal experimentation was carried on by different investigators in many countries, and we have thus come to know that the interesting and varied phenomena of anaphylaxis are due to sensitization to some foreign protein. The first dose or injection of foreign protein which produces the condition of sensitization, is known as the sensitizing dose. Following this first or sensitizing dose, there is what may be termed an incubation period, of approximately ten days, during which the blood and tissues of the animal are endeavoring to form antibodies, in response to the stimulus of the foreign protein. Any further injections given during this so-called incubation period will have no effect other than to prolong the incubation period. This is just what we would expect, as the further injections at this time merely increase the amount of foreign protein, and therefore a longer time is required for so-called antibody formation.

Frank Coke[1] terms the material formed by the blood and tissues in response to the introduction of foreign protein as "digestive substance." At the termination of the incubation period, which corresponds to the completion of the formation of antibodies, or "digestive substance," there is undoubtedly an excess of antibodies or "digestive substance" thrown off into the blood and tissues. Should there be remaining in the blood or tissues of the animal any of the foreign protein originally injected, and not already disposed of by this process, the mere contact of a small amount of this foreign protein with the specific antibodies or "digestive substance" formed, would cause some anaphylactic manifestation at this time. This may furnish a plausible explanation for the serum rashes, which frequently appear some days after an injection of serum, as illustrated by the following case.

Dr. Frederick Schreiber, of this city, had a patient whose history showed her to be a bleeder, and upon whom he was to perform a tonsillectomy. As a wise precautionary measure, he had a Bogg's test performed, which showed a delayed blood coagulation time. Preliminary to the operation, he prescribed massive doses of calcium lactate and also gave an injection of hemoplastin. She made an uncomplicated recovery from the operation, but showed some local urticarial rash at the site of the injection. About ten days later he was called to see her and found she was covered from head to foot with an urticarial rash. He gave her an injection of adrenalin chloride, which cleared it up almost immediately.

*Read before the Medical Society of the District of Columbia, February 22, 1922.

Feeling that this was out of his line of work, he called in Dr. Duehring, and they diagnosed the condition as an unmistakable case of serum sickness.

Anaphylactic manifestations vary in different animals, but generally speaking they are as follows: the animal appears restless almost before the completion of the injection; scratches at muzzle as if irritated; respirations are increased, and dyspnoea sets in; vomiting; diarrhoea, with passage of blood; micturition; tetanic spasms; somersaults; paralysis; collapse; cessation of breathing; death.

A guinea-pig that has been sensitized to horse serum, will react to horse serum, but not to beef serum, and *vice-versa*. In other words, protein sensitization is absolutely specific. When an animal is injected with a sensitizing dose of some foreign protein, the form of anaphylaxis produced is known as active anaphylaxis. If some of the blood serum from a previously sensitized guinea-pig is injected into a normal guinea-pig, the sensitization to that particular protein will be transferred to the second animal, and an exciting dose of the specific protein given immediately to the second animal will cause anaphylactic shock. This is known as passive anaphylaxis. The transference of sensitivity, from one animal to another, is of considerable clinical importance, considering the great number of blood transfusions that are being performed. Ramirez[2], of New York city, reported a case bearing on this point.

A patient was transfused with 600 c. c. of blood, from an apparently healthy donor. The transfusion was completely successful, but about two weeks later, on going out for a carriage drive, the recipient was seized with a severe attack of asthma, the first that he had ever had in his life. Dr. Ramirez, was called in to the case at this point, and on testing found him to be sensitive to horses. Also on testing the donor and going into his history, he was found to be a typical horse asthmatic.

Here we have a perfect illustration of transference of sensitivity in human beings. However, another patient had been previously transfused from this same donor, with an even larger quantity of blood, but has never developed asthma. This may be explained on the assumption that the recipient's blood was for some reason resistant to the development of sensitization; or he may have developed sensitization, and this sensitization has not manifested itself in the form of asthma. Ramirez does not give the blood groupings of these patients, but I assume they are the same. He sounds a timely note of warning, that in addition to the routine examination (Wassermann, blood grouping, etc.), to which donors for transfusion are subjected, their history, with regard to any possibility of anaphylaxis, should be very carefully gone into and, if indicated, tests for protein sensitization should be made.

At this point it may well be emphasized that, previous to the administration of diphtheria antitoxin, the patient's history should be carefully gone into, and if there is any evidence of sensitization, a test with horse serum protein should be performed, particularly if the patient is an asthmatic. Neglect to do this may result in severe anaphylactic shock, or even death.

Oscar M. Schloss[3], in numerous painstaking experiments on children, who had idiosyncrasies to various articles of food, brought anaphylaxis out of the field of animal experimentation, into that of practical clinical medicine. He was the first to establish that it was the protein in the food, that was the offending element, and that all the other constituents were harmless. Secondly, he proved that this idiosyncrasy, or hypersensitiveness, to some particular food protein, was absolutely specific. Thirdly, he demonstrated that the offending protein could be detected by the cutaneous test.

Anti-anaphylaxis: There is a condition which may occur known as anti-anaphylaxis. This means that following a toxic dose of protein which causes, for example, an attack of urticaria, there follows a period of anti-anaphylaxis or temporary desensitization, during which the skin test is negative, and the offending food may be eaten with impunity.

Schloss[3] reported two cases of children in which the ingestion of egg was followed by a generalized urticaria within one to three hours. Following this toxic dose of egg protein, these children were able to eat egg without any symptoms, for a period of twenty-two to forty days. During this period, the skin test with egg protein remained persistently negative. Simultaneously with the reappearance of a positive skin reaction to egg protein, the ingestion of egg was followed by an attack of urticaria.

Bronchial Asthma: True bronchial or

spasmodic asthma is one of the best clinical examples that we have of protein sensitization. Chandler Walker, of Boston, has probably done more original research work on asthma than any other investigator in the world. He and his co-workers, June Adkinson and R. P. Wodehouse, have published a series of some twenty-four intensive studies[4] on the subject. These studies were made possible through a gift of Mr. Charles F. Choate, Jr., to the Peter Bent Brigham Hospital. The revolutionary nature of these studies may be appreciated when we stop to realize that, previous to their publication, asthma was considered an incurable disease of unknown etiology. Walker, in a series of over 600 asthma cases, found 48 per cent to be sensitive to some foreign protein, and 52 per cent non-sensitive. He, therefore, groups asthma cases into two classes: first, those which are found sensitive to some foreign protein, which he designates as true bronchial or anaphylactic asthma; second, those which are not found sensitive to any foreign protein, which he designates as asthmatic bronchitis. Considering the innumerable foreign proteins in our environment, however, I rather incline to the opinion that a large proportion of these so-called non-sensitive or asthmatic bronchitis cases are also due to sensitization to some foreign protein, or perhaps some chemical preparation, and that we have merely failed to detect the offending protein or other substance. Of the sensitive cases, at least 80 per cent can be cured of their asthma by specific protein therapy, and another 10 per cent of these cases can be cured by proper vaccine therapy, either alone or in combination with specific protein therapy. Of the non-sensitive cases, at least two-thirds can be relieved of their attacks by proper vaccine therapy.

Asthma may be due to sensitization to any foreign protein with which the patient comes in contact. The offending protein may enter the body by inhalation, ingestion, absorption, or infection. Inhalation applies to the proteins of plant pollens, and of animal emanations such as hair, dandruff, feathers, etc. Ingestion and absorption apply to food proteins. Absorption may also take place through the conjunctivae, nasal mucous membrance, or, in rare cases, even through the unbroken skin. Infection applies to bacterial proteins. This is a good place to emphasize the fact that bacteria may act in two ways: first, as a typical infection with the formation of toxins; and second, the patient may be sensitive to the protein contained in the bodies of the bacteria.

Technic of Cutaneous Test: The diagnosis of the offending protein or proteins, in the individual case, is made by means of the cutaneous test, the technic of which is as follows: both arms of the patient are bared to the shoulder, and extended with the palms up, upon a table adjusted to the proper height. The flexor surfaces of the upper arms and forearms are then cleansed with 50 per cent alcohol. A series of linear cuts about ⅛ inch long are made with the tip of a fine scalpel. These cuts should be about 1½ inches apart and should penetrate the outer layer of the skin, but should not be deep enough to draw blood, other than the merest trace, which is often unavoidable. To each of these scarifications, with the exception of the first and last, which should be kept as controls, is applied a small quantity of purified powdered protein of the substances to be tested. To each of these is then added a drop of tenth-normal (0.4 per cent) sodium hydroxide to dissolve them and permit of rapid absorption. A drop of the solvent is also applied to each of the control cuts. A positive reaction occurs in from five to thirty minutes, and is indicated by a definite urticarial wheal about the site of the cut, at least 0.5 cm. in diameter, surrounded by an area of more or less erythema. After thirty minutes, the proteins are washed off and the reactions interpreted. Larger reactions than 0.5 cm. are denoted by a series of plus marks, and smaller ones are called doubtful. These doubtful reactions should not be ignored, but should be looked upon as danger signals and repeated at some future time. In some cases a positive reaction is indicated by a large area of erythema, with no wheal formation.

Delayed Reactions: With bacterial proteins, there is still a third form of positive reaction, which appears hours later, the site of the inoculation being elevated, hot, inflamed, and slightly painful, having all the appearances of a mild infection. Unless attention is paid to these delayed reactions, a number of positive reactions will be missed. It seems that some such mistake must have occurred at the Mayo Clinic[5], where 365 tests were performed with the proteins of staphylococcus pyogenes aureus and albus, with not a single positive reaction, whereas Walker estimates

that 10 per cent of all asthma cases are sensitive to some bacterial protein, and my own observations confirm this estimate.

Report of My Own Case: A recital of my own case is the best evidence that I have to offer of the great value of protein sensitization work. At the age of 6 years, I developed bronchial asthma, and was a martyr to the disease for twenty-two years. At the onset of my trouble, I had a very bad pair of tonsils which were thought to be the cause of my difficult breathing. A tonsillectomy and adenectomy was performed at this time by Dr. Charles Richardson, but my dyspnoea persisted and was then recognized as bronchial asthma. From that time on I suffered more or less severely with frequently recurring asthmatic attacks. At times the attacks were so severe that I was unable to go to bed at all, but was forced to spend the night in a chair. I obtained relief, during these attacks, by the inhalation of fumes from some sort of preparations which I burned, containing nitrate of potash, stramonium, and belladonna. Whenever I had a cold, I was completely incapacitated. My first relief was obtained by my parents taking me to Atlantic City. I was having a very severe attack at the time, and my asthma left me almost immediately upon our arrival there, and I was entirely free from asthma the entire time we were there. Upon coming back home, my asthmatic attacks returned. This experience has been repeated innumerable times in my case, i. e., my asthma would always leave me promptly upon going to Atlantic City, but it would invariably return on coming back home. This was erroneously attributed to an unfavorable climate in Washington, because in 1913 we moved to a new residence in the same neighborhood, and my asthma left me entirely for two years, and then returned as bad as ever. I took up the study of medicine, with the hope of finding a cure, but was discouraged by my professors telling me there was no cure for asthma. I have tried potassium iodide, Hare's anti-asthmatic prescription, benzyl-benzoate, and other preparations internally, but with no results other than to cause a digestive disturbance. In an effort to obtain some relief from my suffering, I even resorted to osteopathy, chiropractic, and Christian science, but they all proved dismal failures. In 1919, while an intern in the Atlantic City Hospital, I heard and read something about protein sensitization work as applied to asthma. I obtained some twenty-five principal food proteins with which I tested myself, but they were all negative. Dr. Moulden, of this Society, who is himself a sufferer from hay-fever, had also become interested in this work and obtained some few proteins. He tested me with the ones he had, and got a marked reaction to dog hair protein. I then went to Philadelphia and was tested out by Dr. Alexander Sterling, who found me sensitive to dog hair (plus three), cat hair (plus one), horse dander (doubtful), and negative to all other proteins. Have since performed innumerable tests upon myself, with always the same results, thus convincing me of the absolute specificity of the work. The explanation of my case is simple. At my former residence we always had a number of cats. When I would go to Atlantic City, it merely meant getting away from the cats, which were the cause of my trouble at that time. The two years' freedom from asthma, on changing my residence, was due to the fact that we got rid of our cats. Then someone gave us a dog, and this started my asthma again, as bad as ever. Have gotten rid of our dog, and treated myself with gradually increasing injections of dog hair protein, and, since the completion of this treatment, have been entirely free from asthmatic attacks.

My own case is of special interest because it is one of the very few cases recorded in the literature in which dog hair protein gave the dominating skin reaction, or, in other words, in which the inhalation of the epidermal emanation from dogs was the chief cause of asthma. Most other cases which were sensitive to dog hair protein were also more sensitive to the hair of other animals, such as horses or cats. This shows the absolute necessity of making a specific diagnosis by cutaneous tests before treatment is attempted.

To determine the degree of sensitivity of a patient, tests should be made with varying dilutions of the offending protein, i. e., 1:100,000, 1:10,000, 1:1,000, and 1:500. Treatment should be started with the strongest solution, which fails to give a positive skin reaction. Asthmatic patients should be tested routinely with all food proteins which enter into their daily diet, as well as with the hair or dandruff of such domestic animals as are about the home or place of occupation. Seasonal, or hay-asthmatics, should be tested with pollen proteins.

Those asthmatics who are susceptible to colds, as well as those who do not react to any other form of proteins, should be tested with bacterial proteins. The more proteins that are tried, the more certain one can be of the diagnosis, i. e., that all offending proteins have been detected. I use 175 different proteins, and am continually adding to this supply.

Comparison of Cutaneous and Intra-cutaneous Methods: Some workers in this field, notably Cooke of New York, use what is known as the intra-cutaneous test in preference to the cutaneous test already described. In the intra-cutaneous method, minute quantities of the substances to be tested are injected into the layers of the skin, with a fine needle. I see no advantage to this method over the cutaneous one, and feel that it has a number of disadvantages. The intracutaneous method: first, subjects the patient to a very trying ordeal: second, is difficult of interpretation; third, is non-specific at times, i. e., gives a number of false reactions; fourth, is no gauge to the progress of treatment, i. e., treatment sometimes decreases the size of the reaction, sometimes increases it, and it sometimes remains unchanged; and fifth, may give a very sore arm or even some anaphylactic shock in a very sensitive patient, especially if the needle should penetrate below the skin. On the other hand, the cutaneous test: first, is practically painless; second, is easy of interpretation; third, is absolutely specific; fourth, is an exact gauge to the progress of treatment, i. e., treatment progressively decreases the size of the reaction: fifth, gives no sore arm or anaphylactic shock, even in a very susceptible patient, as the protein may be washed off at any time, thus checking its action. Walker[4] (Study XVII) felt this comparison of the cutaneous and intracutaneous methods of sufficient importance to devote an entire paper to the subject.

Hay-fever: Another typical clinical manifestation of anaphylaxis is seasonal hay-fever, which is usually due to sensitization to the proteins of plant pollens, whereas non-seasonal or perennial hay-fever may be due to any foreign protein. Of the seasonal hay-fever cases, 45 per cent may be completely relieved of all symptoms by specific protein therapy, another 45 per cent may be practically relieved of all symptoms, and, in only 10 per cent of the cases, is this method a failure. Treatment of these cases requires from ten to fifteen gradually increasing injections, given at weekly intervals. Pre-seasonal treatment is by far preferable to co-seasonal treatment, i. e., a specific diagnosis should be made by cutaneous tests, and treatment started far enough in advance to have the patient as completely desensitized as possible just previous to pollination of the particular offending plant.

I am absolutely opposed to the use of any stock mixed pollen preparations, such as are put on the market by a number of commercial houses, for either diagnosis or treatment. No patient should be treated with a mixture of pollens, without first making a specific diagnosis as, by so doing, it is only guesswork, and, furthermore, we are liable to sensitize the patient to some new pollen to which he is not already sensitive.

The pollens are grouped biologically or botanically into a number of groups, i. e., *Gramineae*, such as timothy, June grass, red top, orchard grass, sweet vernal grass, corn, rye, etc.; *Compositae*, such as ragweed (dwarf), ragweed (giant), sunflower, goldenrod, daisy, etc.; *Leguminosae*, etc. The patient should be treated with the pollen which gives the dominating reaction in any particular group. Lack of space prevents any further details as to treatment.

Allied Conditions: *Urticaria*, or hives, is usually due to sensitization to some food protein.

Angioneurotic edema is also frequently proven to be due to protein sensitization. Austrian[6], of Baltimore, reported a case due to pork.

Asthmatic patients frequently give a history of *eczema* in early childhood. Schloss[7], Blackfan[8], Ramirez[9], and O'Keefe, each reports a series of eczema cases in which at least 40 per cent were proven to be of anaphylactic origin.

Sutton[10] reports several cases of *dermatitis* due to ragweed.

Conlon, and Walker[11] report cases of *conjunctivitis* due to food sensitization.

Colds and *bronchitis* are probably of two types, infectious and anaphylactic.

Dr. Hazen[12] reported a case of *erythema multiforme*, due to sensitization to oysters.

In addition to the conditions already mentioned, there are a number of other closely related ones of unknown etiology, such as migraine, epilepsy, paroxysmal hemoglobinuria,

psoriasis, etc., which may eventually be proven to be due to some form of protien sensitization.

SUMMARY: About one-half of all cases of bronchial asthma can be proven to be due to sensitization to some foreign protein. In view of the innumerable foreign proteins in our environment, there is reason to assume that a considerable proportion of the so-called non-sensitive cases are also due to sensitization to some foreign protein or chemical agent, and that we have merely failed to detect the offending protein or substance. The sensitive asthmatic can usually be completely relieved of all attacks by elimination of the offending protein or proteins from his environment, by specific protein therapy, or proper vaccine therapy, or by a combination of these.

The offending protein can usually be detected by the cutaneous test, which is by far preferable to the intra-cutaneous method.

Unless attention is paid to delayed reactions when testing with bacterial proteins, a considerable number of positive reactions will be missed.

The more proteins that are used for testing, the more certain one can be of the diagnosis.

Seasonal hay-fever is nearly always due to sensitization to pollen protein, whereas non-seasonal or perennial hay-fever may be due to sensitization to any foreign protein. Pre-seasonal treatment is by far preferable to co-seasonal treatment.

No stock mixed pollen preparations should be used for either diagnosis or treatment.

A considerable proportion of all cases of urticaria, angioneurotic edema, eczema, dermatitis, conjunctivitis, colds, bronchitis, and erythema multiforme can be proven to be due to protein sensitization.

In addition to the affections already mentioned, there are a number of other related ones, of unknown etiology, such as migraine, epilepsy, paroxysmal hemoglobinuria, psoriasis, etc., which may eventually be proven to be due to some form of protein sensitization.

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BIBLIOGRAPHY.

1. Coke, F.: Asthma and Anaphylaxis, Brit. M. J. 1, No. 3141, p. 372 (March 12), 1921.
2. Ramirez, M. A.: Horse Asthma Following Blood Transfusion, J. A. M. A. 73: 984 (Sept. 27), 1919.
3. Schloss, O. M.: A Case of Allergy to Common Foods, Am. J. Dis. Child. 3: 341 (June), 1912. Allergy to Common Foods, Tr. Am. Pediat. Soc. 37:62, 1915.
4. Studies I-V, J. M. Res. 35, No. 3, p. 373, 391, 487, 497, 509, 1917.
Studies VI-VIII, J. Immunol. 2, No. 3, p. 227, 237, 243, (April) 1917.
Study IX, Am. J. Bot. 4:417 (July) 1917.
Studies X-XIII, J. M. Res. 36, No. 2, p. 231, 237, 243, 295, 1917.
Study XIV, J. M. Res. 36, No. 3, p. 423, 1917.
Study XV, J. M Res. 37, No. 1, p. 51, 1917.
Studies XVI and XVII, J. M. Res. 37, No. 2, p. 277, 287, 1917.
Study XVIII, J. A. M. A. 70: 897 (March 30), 1918.
The Cause and Treatment of Bronchial Asthma, Mad. Clin. of North Am. 1, No. 4, p. 1177 (January), 1918.
A Clinical Study of 400 Patients with Bronchial Asthma, Boston M. & S. J. 179: 288, 1918.
The Treatment of Bronchial Asthma with Proteins, Arch. Int. Med. 22: 466 (October), 1918.
The Treatment of Bronchial Asthma with Vaccines, Arch. Int. Med. 23: 220 (February), 1919.
Sensitization and Treatment of Bronchial Asthmatics with Pollens, Am. J. M. Sc. 157, No. 3, p. 409 (March), 1919.
Bronchial Asthma, The Oxford Medicine, New York, 1920, Oxford University Press, 2.
5. Sanford, A. H.: Protein Sensitization in Asthma and Hay-Fever, Minnesota Med. 3, No. 4, p. 174 (April 20), 1920.
6. Austrian, C. R.: Angioneurotic Edema. A Preliminary Report, South. M. J. 12, No. 7, p. 348 (July), 1919.
7. Schloss, O. M.: Allergy in Infants and Children, Am. J. Dis. Child. 19, No. 6, p. 433 (June), 1920.
8. Blackfan, K. D.: Cutaneous Reactions from Proteins in Eczema, Am. J. Dis. Child. 11: 441, 1916.
9. Ramirez, M. A.: Protein Sensitization in Eczema. Report of Seventy-Eight Cases, Arch. Dermat. Syph. 2, No. 3, p. 365 (Sept.), 1920.
10. Sutton, R. L.: Ragweed Dermatitis, J. A. M. A, 72: 126 (May 3), 1919.
11. Walker, I. C.: Frequent Causes and the Treatment of Perennial Hay-Fever, J. A. M. A. 75: 782 (Sept. 18), 1920.
12. Hazen, H. H.: Severe Erythema Multiforme with Anaphylaxis due to Oyster Protein, J. A. M. A. 62: 695, 1914.

PNEUMONIA.

Etiology and Diagnosis.*

By PAUL DAVIS, M. D., Roanoke, Va.

Briefly speaking, pneumonia is a disease marked by inflammation of the lung. The etiology of this process is as varied here as in inflammation of other parts of the body, and for this reason it is well to have some classification before entering into a discussion of the subject. Of all the divisions and subdivisions mentioned, it is conceded by all that a definite distinction should be made between

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lobar pneunonia and broncho-pneumonia. I shall use these two as a foundation for this paper and endeavor to take up a few of their principal groupings under their separate headings.

Lobar pneumonia is a definite and clear-cut disease entity caused by the pneumococcus. There are four types of this organism, and the disease is usually classified according to the type of pneumococcus causing it. Practically all types of the pneumomococcus are found in cultures from the nose and throat of normal individuals. If the resistance of this individual is lowered; if these organisms are increased to such an extent as to enable them to overpower the normal resistance; or if a more virulent organism is introduced, the lung becomes the seat of an inflammatory condition known as lobar pneumonia. Why the lung is the site of election for this organism has not been definitely proven. Since the fact that it gains entry by way of the air passages and not through the blood stream has been right well established by Cecil and Blake[1] of New York, it is very easy to presume that the lung is attacked only because it is the first organ reached; for we know that the pneumococcus, when it does reach other parts of the body, produces quite definite and serious lesions. An excellent example of this is pneumococcic meningitis which so frequently follows fractures at the base of the skull.

Since the epidemics of nineteen eighteen and nineteen twenty, the discussion of Lobar Pneumonia has excited little interest as compared to broncho-pneumonia. This is a very indefinite term which implies an extension of the inflammatory process from the bronchi into the lung. While this is usually the case, the fact that it is always true has been widely disputed. When a man is well to-day and has an overwhelming broncho-pneumonia tomorrow, it is hard to believe that this was an extension of a bronchitis which was never found, instead of a primary pneumonia. For this reason it seems to me that the subject can best be discussed by taking up epidemic or "flu" pneumonia under a separate heading.

The usual type of broncho-pneumonia is a comparatively rare disease and occurs principally in childhood and old age. It usually follows a bronchitis and the extension is often so gradual that it is hard to say just when pneumonia has begun. The etiology is still obscure. In the light of present evidence, it is probably best regarded as a mixed infection which gains a foothold through some predisposing cause. The wide variation in these causes as well as in clinical types of the disease would seem to strengthen this conclusion. It is this type of pneumonia which so frequently goes hand in hand with measles, whooping cough, scarlet fever and diphtheria. It may accompany or follow any of the debilitating diseases. Inhalation of irritating gases and aspiration of foreign particles and fluids also frequently give rise to a broncho-pneumonia. Post-operative or ether pneumonia would probably belong to this class. Another type which is somewhat different but had best be mentioned here is septic pneumonia which occurs with sepsis elsewhere.

Anatomically, epidemic pneumonia is a broncho-pneumonia but clinically it deserves a place alone. It is by no means a new disease, having begun in the armies of Canada and spread over the United States in 1812. Another big outbreak followed measles during our Civil War. In no former case, however, has it ever reached the magnitude it assumed in the recent World War. First following measles in nineteen seventeen, it became a separate and clear-cut disease entity; then, following and accompanying influenza in nineteen eighteen and nineteen, it caused more deaths in our army than the enemy bullets. The causative organism has been much discussed, and the most logical conclusion seems to be that the same organism was not responsible in different localities. The streptococcus appears to have been found more frequently than any other. In the five hundred cases which were under my care in France, this was the predominating organism in practically all cultures from the sputum. Unfortunately, we did not culture the diseased lung at autopsy, so our work was not absolutely conclusive, although in other places where this was done, the streptococcus was also found in the pneumonic area in the lung. In our hospital the streptococcus hemolyticus, and influenza bacillus occurred rarely, while in other camps they were found in such overwhelming numbers that they were considered as the causative factor by every competent man.

There are many points in favor of the influenza bacillus or bacillus of Pfeiffer. In the

first place this organism is small, hard to find, hard to culture, and hard to stain, and is frequently overlooked by other than the most expert bacteriologists. Also, Blake and Cecil[2] of New York, produced broncho-pneumonia in monkeys by intracheal injections of the influenza bacillus. On the other hand, all efforts to produce the disease in man by using cultures of this bacillus have failed.[3]

The theory that influenza and its attending pneumonia is produced by a non-filterable virus also has numerous supporters, and much might be said for this theory in the way of argument.[4]

However, after gathering all the evidence, we are finally forced to conclude that there probably is no specific organism or virus, and that, if there is, it certainly has not been definitely proven.

Diagnosis.

The diagnosis of pneumonia as a rule presents few difficulties. The classical picture of lobar pneumonia is easily recognized with its sudden onset, pain in the side, chill, dyspnoea, headache and vomiting, soon followed by cough and the expectoration of rusty sputum. Sometimes the referred pain to the abdomen leads to a diagnosis of appendicitis, but this mistake would be made less frequently if careful chest examinations were made on all cases.

Broncho-pneumonia, on the other hand, is a disease much more difficult to diagnose. Occurring so frequently as it does along with other acute conditions, it is often overlooked. it presents no definite clinical picture and the areas of consolidation in the lung are often so small that the physical findings are uncertain. Usually the respiratory rate is increased but sometimes not. The blood picture is not definite. As a rule there is very little leucocytosis, especially in the type which follows influenza. Cyanosis is the rule rather than the exception in broncho-pneumonia, and this with a rapid respiration and the finding of fine rales below the angle of the scapula posteriorly will usually lead to a correct diagnosis. Especially is this true of epidemic or "flu" pneumonia.

The pulmonary form of acute miliary tuberculosis often resembles broncho-pneumonia very closely. This usually gives early signs in the apices while broncho-pneumonia usually begins in the bases. The course of miliary tuberculosis is usually longer, the temperature remissions more marked, and the sputum examination in these cases often reveals the tubercle bacillus.

Pleural effusion is sometimes mistaken for pneumonia. Exploratory puncture is easy and simple and will eliminate this confusion.

Pulmonary abscess, encapsulated empyema, and interlobar empyema often raise a question, and an area of unresolved pneumonia can only be eliminated by a careful history and chest examination together with X-ray studies and exploratory puncture.

Pulmonary infarct often resembles pneumonia but examination in this case usually shows damaged heart valves. As a rule the patient is found sitting up in bed and seldom is this the case in pneumonia.

Atelectasis sometimes leads to confusion. It occurs with some forms of bronchitis, great hypertrophy of the heart, or large pericardial effusions. The only characteristic sign of this condition, as described by Pasteur, is a displacement of the apex of the heart toward the affected side.

Syphilis and carcinoma of the lung can usually be eliminated by the history.

Typhoid fever and meningitis often lead to a diagnosis of central pneumonia at first, but the clinical course and laboratory findings soon make the diagnosis clear.

In conclusion, I should say that, to my mind, increased respiratory rate is the sign that should always guide to pneumonia. A respiration over twenty-five should point a finger of suspicion at the lung and demand it to be proven negative before another diagnosis is made.

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References.

1. Blake, F. G., and Cecil, R. L.: Jour. Exper. Med., N. Y., 1920, XXXI, 403.
2. Blake, F. G., and Cecil, R. L.: Jour. A. M. A., 1920, LXXIV, 170.
3. Rosenau, M. J.: Jour. A. M. A., 1919, LXXIII, 311.
4. Bloomfield, A., and Harrop, G. A.: Johns Hopkins Hosp. Bul., 1919, XXX, 1.

SYMPTOMATOLOGY AND TREATMENT OF PNEUMONIA.*

By GEORGE B. LAWSON, M. D., Roanoke, Virginia.
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It is with a feeling of hesitation that I undertake a paper on the Symptomatology and Treatment of Pneumonia, because the patient

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in the home offers somewhat of a different problem from what he does in the hospital; and a great majority of cases must be treated in the home and sometimes under the greatest hardships. In the well-equipped hospital, when in doubt, we are beginning to rely more and more on the laboratory, the X-ray, and the consultants along the different lines, and in this way we feel sometimes that we are losing certain elements of that keenness of diagnosis which the physician must have who has not these advantages. In many cases the physician is miles from another physician and must work out his problems alone. He must decide and take the responsibility at times, whether the patient is still a simple pneumonia or whether there is a surgical condition present, for which the patient should be sent to the hospital.

There is hardly a disease which has a more typical, or a more constant group of symptoms than a simple lobar pneumonia. It may come on after getting wet or after exposure to cold, or as in most cases, there are no causative factors that can be determined. It usually sets in abruptly with a chill that may be very severe, lasting from a few minutes to an hour. This chill gradually gives place to high fever and by the time the physician is called, we find the typical pneumonia picture which gives the diagnosis almost at a glance. The face is flushed. The patient has an anxious appearance and the respiration is very rapid and may be accompanied by a short expiratory grunt. There is dilatation of the nostrils with every breath. The patient complains of pain and this may be at the location of the disease or it may radiate to other parts, frequently giving definite abdominal symptoms, which may lead to operation. The patient has a hacking cough which may at first cause him to hold his side because of the pain. The cough may at first be unproductive, or it may bring forth a little mucus which gradually becomes more or less blood tinged, gradually changing to a rusty tenacious sputum which is so typical of pneumonia. There is little change in this picture for the first few days except that the patient becomes weaker and more toxic. The fever tends to remain at a more or less constant level. This disease may be very severe from the onset. It is rarely mild.

The broncho-pneumonia differs somewhat from the lobar pneumonia. It is found more in children, or more frequently as a sequela of some of the childhood diseases, especially whooping-cough and measles. In carefully going over the history of pneumonia, it is interesting to find that for a few years after the former epidemic of influenza there was a tendency for the pneumonias to be of the broncho type. This seems to be especially true during and since the recent influenza epidemic, which has greatly changed the ordinary pneumonia picture. We have all seen patients start in with a typical influenza and quickly develop moisture all through the lungs and die in a day's time. We have seen others start in with a pneumonia of apparently only a small area but quickly develop into a large effusion, which at first is slightly turbid and may take a few days to develop into a true pus. In other patients we have seen the onset almost from the first as a streptococcic pleural effusion, and the lung shows very little pneumonic changes. These are the types of cases that have increased the mortality of empyema.

At a varying period, usually from five to twelve days, the temperature falls rapidly—the so-called crisis;—respiration becomes less rapid, the pulse slower and the patient passes very quickly from a condition of extreme illness and discomfort to one of comparative well-being.

At times the pneumonia may not start in as a fulminative process, but as a low-grade irregular fever; and the pneumonia is hardly suspected until found by routine examination. This is especially true in the old, the weak, and the post-operative. In very severe cases of pneumonia there may be no crisis but the condition gradually becomes worse. The pulse becomes weaker and more rapid, the cyanosis becomes more marked, the patient seems sicker, and death occurs.

An apparently mild pneumonia that is getting along well may very quickly change to one of the severe type going rapidly on to death. In a number of patients with pneumonia, the process gradually improves and the fever falls slowly, the so-called lysis: and the patient gets well slowly, just as after any other sickness.

A few pneumonias will terminate in abscess formation. In a few patients, especially in the old and weak, a part of the lung will become gangrenous. Sometimes during the course of pneumonia, while the fever is still

high, there will develop an empyema, or, after the fever has dropped to normal, we may find in a few days that the patient does not seem so well, the appetite is poor, and there is an afternoon fever which gradually ascends. The patient looks toxic and upon examination, we find the typical empyema. If this is not drained, the patient gradually gets sicker and dies. However, in a few cases of empyema the pus may rupture into a bronchus, causing death by drowning. The pus may be coughed up, giving the patient temporary relief and sometimes permanent relief. However, a great many of the patients die of exhaustion. The pus in a few of the empyemas may rupture through the chest wall. We have had only two such cases in our series. In about 1,100 patients admitted to our hospital, we have had 103 empyemas, or about one in every hundred has been an empyema. Our rate would possibly have been higher but for the fact that our hospital was closed during the first influenza epidemic. Our death rate from empyema has been only seven out of 103 patients; and included in this number are two patients with subdiaphragmatic abscess rupturing into the pleural cavity. A few of these patients left the hospital before complete recovery and were not followed out. One patient had empyema first on one side and then on the other, and finally recovered. I have gone into these statistics merely to emphasize the good results that can be gotten in this condition, which is practically hopeless without surgical treatment. Sometimes I hear of a patient who died of fever or of some heart trouble following pneumonia, and I nearly always have the feeling that something might have slipped by in the line of diagnosis.

Pneumonia occupies almost the same place that it did a half century ago. It is still practically the leader in our death rate; and while we have been able to work marvels in other diseases in regard to their prevention and cure, we have in pneumonia no magical preventive as we have in typhoid; no magical treatment such as we have in diphtheria, malaria and syphilis. Even the scourge of tuberculosis is being greatly lightened by sanitary methods in prevention and by proper methods of treatment. The different methods in vogue in the treatment of pneumonia, the very many different drugs, vaccines and serums used, all taken together, are a confession of our weakness in the treatment of this disease. Yet, in spite of this, by putting the patient under the best sanitary conditions, by having good nursing and by using our weapons in a sensible way, we can, to a certain extent, reduce the mortality rate of this disease. In the prevention of pneumonia, general cleanliness should be enforced and the ordinary methods of sanitation carried out. The value of vaccination as a preventive has not been definitely proven as yet.

In the treatment of pneumonia, the personality of the physician must be such that he will have the confidence of both the patient and his friends. It will frequently require greater tact and skill to successfully handle the friends and relatives than it will the patient. If the home conditions are fairly good and good attention can be secured, the pneumonia patient is better if he is not moved from one place to another; for the exertion of any kind of travel seems to give a bad effect. I would even suggest that he be not moved to a hospital unless there is doubt about the condition present, which may be solved by the X-ray, laboratory tests, or unless a definite surgical condition has supervened. The physician should be on the alert to make use of any advantage that may be present in the home and teach the friends and relatives how to give the best help in the care of the patient. The patient should be kept in a comfortable bed and made as comfortable as possible. He should be in a fairly large, well-ventilated room. If the type of pneumonia is the simple lobar, it is better to have a great deal of fresh air in the room, and the room made very cool. The patient will possibly do better in a room with the windows open and with little, if any fire. You have often seen the almost immediate improvement in the patient when he has been kept in a small, hot crowded room, after the windows were opened and the fires allowed to go out, and every one except the nurse excluded from the room. The simple influenza and broncho-pneumonia, since the epidemic of influenza, do better in a room that is fairly well ventilated, but kept comfortably warm.

If the pneumonia patient is seen early, so that the chill is a troublesome factor, it may be relieved by hot blankets, or by hot lemonade or a mild stimulant. If the pain in the side is very severe, it may require some mild opiate. Generally it is better to give some

mild purgative in the beginning, and later on keep the bowels open with a mild laxative. The abdominal distention may become so uncomfortable as to require a laxative or an enema. The patient should be put on a simple liquid diet, preferably sweet milk, if it does not cause gastric disturbances; also buttermilk and albumin and other liquid foods are very good and prevent a tiring of one kind of diet. The mouth should be kept as clean as possible.

At times there are marked nasal symptoms and the condition may be improved by spraying out the nose with a cleansing solution and then with adrenalin to give better ventilation. Sometimes in children with marked rhinitis, cough, fever, and other symptoms of broncho-pneumonia, the condition may be relieved in a few hours by such treatment. The patient should be encouraged to drink water freely to eliminate toxemia. This also keeps down the fever. We feel that external hydrotherapy to reduce fever is of great value, but dangerous unless carefully used. We feel that the indiscriminate use of coal tar products is dangerous, and, if they are used at all, it should be done sparingly.

Among drugs, digitalis is being used frequently as a heart stimulant and to prevent fibrillation, and with many it is a custom to put the patient on enough digitalis to give a slight digitalization even at the beginning of the disease, and later on it can be used as necessary. To me, it seems sometimes that the digitalized patient died quicker when in extremis than the non-digitalized, but this is not the opinion of those who have had wider experience. Morphine or codeine is of great value. It may be used early for the pleural pains and later on for restlessness. Morphia should be used only in small doses and repeated often if necessary. The patient who is restless during the day and who has had restless nights wears out very quickly. During and since the influenza epidemic, we have been using adrenalin hypodermically in small doses during the fever, with the feeling that the formation of adrenalin by the body is greatly diminished by the toxemia. Osler remarks that the explosive onset of pneumonia bears a certain resemblance to the anaphylactic reaction. We have felt that adrenalin might constrict the capilliaries and prevent an extension of the pneumonia in spite of the fact that adrenalin sprayed on the bare lung showed no constrictive effect. And we have felt that adrenalin might act as astimulant even for a short time. And lastly, we have felt that the clinical results were good after the use of adrenalin. The adrenalin should not be used if it seems to give a bad effect or to cause nervousness.

Various vaccines, phylacogen, autolyzed bacteria, etc., are used intravenously and subcutaneously by the profession at large and even in some of the larger clinics. This type of treatment seems to me irrational and it merely adds more toxin to an already overburdened patient.

Pneumonia, due to the pneumoccocus, may be classified by the bacteria found into four groups. In the Rockefeller Institute the mortality rate has been greatly reduced in Group No. I by the use of Group No. I anti-pneumococcic serum. In the other groups the serum has been of little value; and it is thought best not to use serums without grouping. Some of the largest and best hospitals do not use serum at all in the treatment of pneumonia. The technique of grouping is practical only for the larger hospitals. Serum therapy seems to offer little aid for the treatment of pneumonia in the country or small towns. Especially is this true when it seems that so many of the pneumonias are of the broncho type and may not be due to the pneumoccocus at all.

The use of local applications, such as mustard plasters to the chest, is of value where there is much pain. It is also felt by relatives that such things are of value, and under such conditions it is well to use them sometimes if they do not add to the discomfort of the patient. The heavy clay plaster should not be used because it impedes the already embarrassed respiration. Generally, it is better not to use expectorants, such as the ammonia group, because they frequently do harm to the stomach.

If the patient is not doing well, it is better to have consultation, if it is possible, because the physician in charge may overlook something that the consultant may pick up; and a consultant will give moral support to the attending physician. If your patient does not improve in the usual time, or begins to run a septic temperature, every effort should be made to extend the knowledge of conditions present. This can be done by consultation, by aspirating, if thought neces-

sary, or by sending to a hospital. Bleeding may be of some value in the very full-blooded patient, or where there are signs of cardiac distention. At the Rockfeller Institute an oxygen chamber has been constructed for the pneumonia patient. In this chamber the oxygen percentage can be increased at will. After his sickness, whether it is simple influenza or simple pneumonia, we should not allow the patient to get out of bed too soon, because a longer stay in bed will help him to recuperate more quickly.

Do not overtreat your patient. Too much manipulation may be a great drawback; too much medicine is useless and may do harm in many ways; and if I may summarize the treatment of pneumonia in one sentence, it is: Study your patient carefully; keep him under the best conditions; and be ready to meet complications as they arise.

SOME PHASES IN THE TREATMENT OF PNEUMONIA.*

By G. G. HOWERY, M. D., East Radford, Va.

In the presentation of this most important subject, I shall only endeavor to call attention to some of the most vital points, which may be closely adhered to in the treatment of both lobar and bronchial pneumonia.

1st. Complete rest both physical and mental.

2nd. Plenty of fresh air.

3rd. Nutritious diet and pure water.

4th. Careful nursing.

5th. Drugs properly administered according to their several indications.

6th. Serum or specific treatment.

Rest: In considering rest we should insist upon both mental and physical rest. If the patient be an adult, we should attempt to have all business worries dismissed from his mind. Visitors should be prohibited, only those who nurse the case being allowed in the room and, if we are so fortunate as to have the services of a trained nurse, only such members of the immediate family as are necessary to soothe the patient.

If the patient is very nervous or suffering severely, he should be quieted by bromides or, if these will not produce the desired effect, a hypodermic of morphine should be given. He should be kept in a recumbent position and not allowed to arise from bed for bowel or kidney action, but the bed pan and urinal should be used.

This rest should be continued until convalescence is well established and, if the patient does well, he may be allowed a back rest after the temperature has remained normal about one week. He then should be gradually allowed to sit up in an easy chair and later to stir around.

Fresh Air: In order to insure a free circulation of pure, unheated and unbreathed air, we should attempt to find a light airy room with at least two windows, one opposite the other. The patient need not be placed immediately between these windows in the draft but this would be immaterial if the patient had sufficient bed clothing to prevent chilling. I have made it a rule to keep the room temperature between sixty and seventy degrees for the comfort of those in attendance on the patient, stressing particularly the importance of a free circulation of air in the room. If this is strictly carried out, I see no reason to insist upon a patient's being kept out of doors, especially in the cold winter months. I find this more acceptable to those in attendance to the patient and, by protecting the patient's bed by means of proper screens, a free circulation of air may be had at all times and neither cold, drafts, nor dampness will harm your patient.

Nutritious Diet and Pure Water: Water should be given abundantly either as plain water or lemonade, which will have a tendency to lessen the intoxication. When the patient is delirious, water should be given by the bowel.

The food should be nourishing and not too great in quantity. It should be given at frequent intervals and should be of a character which is easily digestible and which will not undergo fermentation in the bowels. When abdominal distention is present and of a severe character, the food should be reduced in quantity or even withheld for awhile. I consider abdominal distention a sign of one of the worst types of intoxication and it has proven as hard for me to combat as any complication I have had, resisting the most strenuous treatment.

*Read at the meeting of the Southwestern Virginia Medical Society, at Pulaski, May 11 and 12, 1922.

NURSING: The service of a trained nurse is a very important factor and, when at all possible, we should have a trained nurse in constant attendance, whose duties should be to look after all treatment and report to the physician any sudden delirium or rapidly occurring heart failure and, in general, to anticipate the patient's needs.

DRUGS: Pneumonia was considered by Osler to be a self-limited disease; therefore it is a useless practice to promiscuously drug your patient and only such drugs should be administered as have a special indication. The bowels should be cleansed thoroughly at the onset with a dose of calomel, followed by a saline or castor oil; later a daily evacuation of the bowels may be had from an enema or some good laxative. I have seen what looked to be a beginning bronchial pneumonia in children apparently cut short by the administration of from ten to twenty grains of calomel followed in a few hours by castor oil. This will occasionally reduce the temperature to normal, inside of twenty-four hours, the lung symptoms clearing up at the same time. It is true that this type of case is most likely due to an auto-intoxication from cold and not to a true pneumonic infection.

The fever does not usually demand any special attention except in those long drawn out cases, or in a case of hyperpyrexia, a fever of from 103 to 105 degrees being well borne for a period of eight or nine days. When needed, the ice cap may be applied to the affected side, or to the head, and an alcohol rub or a tepid sponge bath will be of service. Coal tar products should never be used, owing to their depressing action on the heart.

Severe pain, violent delirium, or extreme restlessness can best be controlled by the use of a hypodermic of morphine, either with or without hyoscine, and, if this delirium occurs in an alcoholic addict, the use of moderately large doses of alcohol are permissible and usually the most effective means of controlling the patient.

The circulation should be observed very closely and prescribed for intelligently. A low blood pressure is usually significant of a severe toxemia; this will to some extent hold good with reference to the temperature. The aforesaid symptoms, with a tendency to venous congestion with extreme heart weakness, would call for the administration of digitalis, which should be pushed to its full physiological effect and then withdrawn for awhile. Digitalis is a most useful drug also in all cases of pneumonia in which you have an organic heart disease and, in conjunction with digitalis, I would not fail to mention caffeine in the form of the caffeine sodium benzoate, camphor in oil, and strychnine sulphate, all of which may be given hypodermically in an emergency, and aromatic spirits of ammonia which may be given internally and by inhalation in the treatment of the several cardiac complications of pneumonia.

It is said of strychnine that it neither raises nor lowers blood pressure nor is it a heart stimulant but, in my experience, I have found doses of from 1-40 to 1-20 grain, given every three or four hours, to make my patients rest better, pulse seem stronger, respiration easier, and distinctly improve their general condition and, unless I am thoroughly convinced that some other drug will serve me a better purpose, I expect to continue its use.

There is another type of case which, instead of having a low blood pressure, shortly after the chill reacts and has a full bounding pulse, increased blood pressure, cyanosis, and accentuation of the second pulmonic sound. Here blood letting, so much practiced by our forefathers, would be indicated, or we may make use of 1-100 to 1-50 grain of nitroglycerine, every half hour during the day, at the same time giving five or six drops veratrum viride every four hours, gradually decreasing the dose until the fourth or fifth day.

The irritating cough accompanying this disease can be treated in a number of different ways. Counter-irritation over the area involved, either by mustard plaster or mustard water, will frequently relieve the cough. Steam inhalations are very soothing and will help to take care of the sticky, viscid exudate. For this purpose compound tincture of benzoin may be used, a teaspoonful added to a quart of boiling water, letting the patient inhale the steam, which can be most conveniently administered by means of the croup kettle. If counter-irritation and steam inhalations do not relieve the cough, the use of drugs should be resorted to, those deserving special mention being chloride and carbonate of ammon-

ium and potassium citrate. These will have a tendency to relieve the sticky exudate and promote expectoration. If the cough is very harassing, small doses of the camphorated tincture of opium may be added.

SERUM OR SPECIFIC TREATMENT: The treatment of pneumonia by the use of serums, phylacogens and vaccines has so far been very unsatisfactory, according to most writers. At present, it is claimed that Cole, of the Rockefeller Institute, has put the serum treatment of pneumonia on a firmer basis; however, as yet, the methods proposed by him are too cumbersome to make his method applicable to those not having access to a well equipped hospital and laboratory in which the proper bacteriological examinations may be made.

HERNIA OF THE LIVER AND INTESTINES IN THE NEW BORN.*

By ESTILL L. CAUDILL, M. D., Narrows, Va.

As there has recently been reported in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION two cases of Amniotic Hernia, I wish to call attention to two unusual cases of hernia occurring in my own practice.

CASE No. I.—Mrs. F. R., aged 18, American, housewife. A primipara, with no history of miscarriages. Was delivered February 21st, after a normal labor, of a baby boy weighing eight pounds. The baby was normal so far as could be determined. The umbilical cord, which appeared normal, was ligated one inch from the umbilicus. The baby was wrapped in a blanket and given to the nurse.

While attending the mother in the third stage of labor, the child suddenly began screaming, and my attention was called to the fact that "the baby's intestines had come out." Returning to the child, I found the greater part of the small intestine, the caecum, appendix, ascending and transverse colon, had escaped through an opening at the umbilicus, apparently no larger than a twenty-five cent piece. The umbilical cord had been completely divided to the point of ligation. The child was placed on its back, and an effort made to replace the intestines. After considerable work I succeeded in replacing all but one loop of the bowel, which had become very much distended. In my haste to replace this remaining loop of bowel, while trying to press it through the small opening, I unfortunately ruptured the bowel. The bowel was then pulled out and the rent in the bowel closed with a silk purse string suture. An incision about two inches long was then made above the original opening. The bowel was easily replaced into the abdominal cavity. The opening was closed with plain cat gut, including the peritoneum, fascia and skin in one layer.

An unfavorable prognosis was made to the family.

The wound healed by first intention, the temperature never went above 102. On the fourth day a dose of castor oil was given. The child made a splendid recovery and has had no trouble since.

CASE No. II.—Mrs. C. P., aged 20, American, housewife. A primipara, with history of having had two miscarriages about the third month. Delivery of a boy occurred September 28th. Labor normal. The baby was well developed and normal with the exception of a large hernial protrusion from the umbilical region. The mass was the size of a large orange and very hard and extended from the umbilicus to the ensiform cartilage, the umbilical cord coming off from the lower portion of the mass. The hernia was covered with a thin glistening membrane. The anterior abdominal walls were well developed, the hernial mass being very much constricted at point of emergence from the abdominal cavity.

The child was given a general anesthetic by Dr. E. S. Carr. An incision was made through the hernial sac and the opening in the anterior abdominal wall enlarged about two inches below the umbilicus. The hernia contained nothing but the liver which was apparently very much enlarged. Reposition was very difficult as the abdominal cavity was short, the liver completely filling the cavity. The opening in the abdomen was closed with plain cat gut, the skin fascia and peritoneum being closed in one layer. The child recovered from the anesthetic but died the following day.

These cases are reported because of their rare occurrence.

*Read at the meeting of the Southwestern Virginia Medical Society in Pulaski, May 11 and 12, 1922.

SUB-MUCOUS ULCER OF THE BLADDER.

Report of Cases Treated by Excision.*

By T. J. HUGHES, M. D., Roanoke, Va.

Sub-mucous ulcer of the bladder is a rare form of infection which, as the name implies, principally involves the sub-mucosal structures. In Huner's first artcile on this subject, he gave it the title, "Rare Form of Bladder Ulcer." Other suggestive and more or less descriptive terms have been employed, such as "Elusive" and "Evasive" Ulcer of the Bladder, each indicating its difficulty of recognition and diagnosis. Keen proposed the term "Pan Mural Ulcerative Cystitis." Geraghty saw fit to term it "Paracystitis."

For the reason that the disease very slightly involves the mucosa and greatly involves the sub-mucous structures, the term sub-mucous ulcer seems quite descriptive and serves to differentiate it from that form of simple ulcers of the bladder in which the destruction is largely of the mucosa.

A search of the literature impresses us with the few cases on record of this form of bladder ulcer, and especially of the extreme rarity of its occurrence in the male. I have been unable to find but two cases recorded as occurring in the male and both of these were reported from the Mayo Clinic in a series of fifteen cases. Of the two cases reported in this paper, one was in a male and one in a female.

The etiology of the disease is somewhat in question, as is also a satisfactory explanation as to its predilection for the female bladder. Focal infection in the teeth, tonsils, and other remote parts of the body, has been advanced as the most probable source of the infection, but proof of this has not been positive. In both cases reported here, as well as the majority of those on record, the kidneys did not exhibit evidence of former disease. The kidney function was normal and the urine sterile. These facts, together with the sub-mucous involvement of the bladder wall, strengthen the contention that it is a blood-borne infection.

Since the paravesical changes with cellular infiltration and edema are most marked in the outer coats of the bladder wall, it would seem that the infection is not carried by the urine. Then the fact that the urine is sterile, in most of these cases, is further evidence that the infection must come from without the urinary tract, and this presumption is further strengthened by the fact that the surface of the bladder, in contact with the urine, is the least affected.

The prominent symptom of this disease is most agonizing and excruciating pain in the lower abdomen, particularly marked when the bladder becomes distended. This may be explained by the tension on the intra-muscular nerve fibers when the bladder is full. The fact that the pain is not characteristic of the pain of ordinary cystitis and may be referred to any part of the abdomen, according to the location of the ulcer on the bladder wall, may lead to a mistaken diagnosis of disease of other pelvic organs as will be shown in one of the cases herewith reported.

Intermittent attacks of gross haematuria, together with negative microscopic findings between the attacks of bleeding, also tend to divert one's mind from ulcerative cystitis. The severity of the symtoms is out of all proportion to the cystoscopic appearance of the bladder and the microscopic findings in the urine. The distinctive characteristics of this form of bladder ulcer then might be mentioned as follows:

1. Extreme severity of abdominal pain and bladder symptoms with negative microscopic urinary findings.
2. The history of intermittent attacks of gross haematuria.
3. The comparative insignificant appearance of the bladder mucosa as observed through the cystoscope.
4. The long standing of these cases, the first symptoms dating back a number of years.
5. The history of some remote focus of infection—teeth, tonsils, etc.

The following cases have been treated at the Shenandoah Hospital.

Mr. B—, age 38, admitted to the hospital for examination June 15, 1919. He gave a

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history of severe abdominal pain with vesical tenesmus on urinating, for the past seven years. Treatment under several competent physicians had failed to give any relief. He had been unable to work for several years. Blood examination negative, urine negative except for a few W. B. C., prostate not enlarged. He was referred to an urologist for cystoscopic examination. No definite pathological lesion being found except hyperemia or mild cystitis, he was given bladder irrigations of nitrate silver solution, together with internal administration of urinary antiseptics, and allowed to return home to continue treatment. He received temporary improvement while pursuing the treatment, but returned to the hospital on June 26th, 1921, competely broken down physically from pain and loss of rest and sleep.

I referred him to Dr. S. B. Cary for urological examination. Dr. Cary made a diagnosis of sub-mucous, or evasive, ulcer of the bladder and sent him back to me for operation. Through a suprapubic incision under local anesthesia, the bladder was opened and the ulcer excised. The bladder was closed and the prevesical space drained for thirty-six hours. A permanent catheter was left in the urethra for five days. He was given a back rest on the third day, a chair on the sixth day, and left the hospital on the eleventh day. He was promptly relieved of the distressing bladder symptoms and made an uneventful recovery. He had badly decayed teeth with pyorrhea.

The other case is that of a female and was operated by my friend, Dr. L. G. Richards. The diagnosis of sub-mucous ulcer was made by Dr. Cary, through whose courtesy I obtained the following history.

Terrific abdominal pain for the past ten years, most of which time was spent in bed. Six of seven abdominal operations had been done from time to time by almost as many surgeons, until all of her pelvic organs had been removed (except the bladder) with no relief of her complaint. She had become a morphine habitue through the necessity to give relief at times. She gave history of having had quinsy, tonsillitis, pyorrhea, and decayed teeth; tonsils and teeth had been removed.

Through a suprapubic incision, the bladder ulcer was excised last January with most gratifying relief.

In both of these cases the urine was sterile and the blood-Wassermann negative. Microscopical examination of the ulcers showed edema and infiltration of the outer layers of the bladder wall, and the most logical inference one could draw as to the etiology in both of these cases is that the infection was blood-borne and came either from the teeth or tonsils, or both.

TREATMENT OF DIPHTHERIA.*

By T. K. McKEE, M. D., Saltville, Va.

Since I began the practice of medicine in 1897, the treatment of diphtheria has been completely revolutionized. I still retain a vivid memory of my feeling of incompetency when called to treat this dread disease. In those days we went forth to meet the enemy armed with various gargles, sprays, vaporizing treatments, local applications, etc. The death rate under the old regime was appalling. So far as our methods of treatment were concerned, all were equally valueless. Under good care the mild and moderate cases recovered; the severe cases died regardless of treatment. All the old remedies are forgotten and fortunately are no longer needed.

We knew that true diphtheria was caused by the Klebs-Loeffler bacillus, but the discovery of antitoxin by Behring and Roux was in an experimental stage, and up to that time had been confined to experiments on animals. I am sure the older members of the profession will recall how anxiously we looked forward to the treatment of human beings with this serum. When it proved a success, it was heralded throughout the world as the greatest discovery of the age. Like all new discoveries, it was looked upon by many as an experiment, and left for the bolder members of the profession to try out. Many stood by the old remedies and only turned to antitoxin as a last resort. Consequently, it was frequently given too late and the patient died. The fatal termination was usually charged up to the remedy and in many instances it fell into dis-

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repute. I have a neighboring physician who administered antitoxin to three consecutive patients, all of whom died. He has never given another dose and has frequently retired from cases when the family insisted that it be given. The fact, that it was given in small doses and late in the disease proved a great handicap to its success. When we first began to use antitoxin, two thousand units was considered a full dose and this was not given until we had extensive membrane. We wonder now how we accomplished so much with so little. The laity soon had the idea that it either killed or cured. I have frequently had to exhaust all of my persuasive powers to obtain the consent of parents to its use.

In spite of the fact that antitoxin is a specific, we still have a mortality that is too high. This, in some instances, is due to the parents who fail to realize the danger that may arise from a sore throat or a croupy voice, and do not call the physician until late in the disease. A child suffering from diphtheria must be looked upon as poisoned. Antitoxin is the antidote and every case must receive enough of the antidote to neutralize the poison. Whether enough antidote will be supplied depends upon the duration of the infection when seen by the physician, and the proper application of the remedy. If we make a mistake here, let it be on the safe side. We know, that a large dose is perfectly safe and that a small dose may be insufficient. Antitoxin bears the same relation to diphtheria that water bears to fire, —the quicker the water is turned on the blaze, the more readily is the fire extinguished. If delayed too long, no amount of water will save the building. If antitoxin is too long delayed any quantity given may be of no avail.

Case.—In 1907 I was called to see a twelve year old boy who had taken sick the previous night. Temperature was 102, tonsils swollen and red, but no membrane. This patient lived several miles in the country and the time was before Henry Ford's fondest dream had been realized. I requested his mother to watch his throat and call me if he did not improve. One week later I was called and found him with an advanced case of diphtheria. Thirty-five thousand units of antitoxin administered in the next thirty-six hours had absolutely no effect. The alarm was turned in too late. This taught me a lesson that I have never forgotten. Unless confident I have some one upon whom I can rely, I never dismiss a sore throat until I have made a positive diagnosis.

In many cases, at the beginning of the disease when the tonsils alone are involved, it is impossible without the aid of the laboratory to differentiate diphtheria from tonsillitis. We frequently see cases that require two or three days to make a positive clinical diagnosis. Especially is this true in follicular tonsillitis, for in this condition more than in any other form of the disease we must be careful regarding a positive opinion. There are follicular forms of diphtheria involving the lacunae of the tonsils, which clinically so resemble diphtheria that even an expert cannot differentiate them. In such cases, the city physician, having access to a laboratory, has a decided advantage over the country doctor. When a positive diagnosis cannot be made, the only safe rule to follow is to administer antitoxin. In several instances I have given antitoxin and felt afterwards that it was not a case of true diphtheria, but have never seen any unfavorable results from its use.

Laryngeal diphtheria is the most distressing and alarming type of the disease we are called upon to treat. This form may develop secondarily after two or three days of the illness, or it may be the first manifestation of the infection. When a child, ill with tonsillar diphtheria develops a hoarse or croupy voice with or without impeded respiration, the larynx is almost invariably involved. The family should always be advised of the importance of such development and instructed to call a physician at once. Even though the throat may show little evidence of diphtheria, if the above symptoms appear, it is wise to administer antitoxin. If these cases can be reached early and treated heroically, most of them can be relieved without the necessity of intubation. Antitoxin should be given in large doses and repeated at frequent intervals. No case of diphtheria should receive less than five thousand units. In the laryngeal type not less than fifteen to twenty thousand units should be given in any case, regardless of age. Since adopting this method I have not found it necessary to intubate in any case except when called late in the disease. I have recently treated two severe cases successfully in this manner.

CASE No. 1.—A child eighteen months of age, sick twenty-four hours, found suffering from severe dyspnoea and paroxysms of cyanosis. Gave fifteen thousand units of antitoxin, followed in eight hours with ten thousand, and in twelve hours with ten thousand, thirty-five thousand units given in twenty hours; patient made a good recovery.

CASE No. 2.—A boy seven years of age had been croupy for the past thirty-six hours. Found him suffering from difficult breathing, partial cyanosis, with slight membrane on the tonsils. Gave twenty thousand units of antitoxin, followed in eight hours by twenty thousand, and in twelve hours by twenty thousand, sixty thousand units in twenty hours; good recovery.

I feel confident that, but for the large and repeated doses, both of these would have been intubation cases. It has been well established that large doses of antitoxin are perfectly safe. It has been given in sixty thousand unit doses intravenously with splendid results.

In advanced cases with laryngeal stenosis, a fatal termination can frequently be prevented by intubation. Just when to intubate is sometimes a puzzling question, but here, as in the administration of antitoxin, it is better too early than too late. When the patient begins to show such danger signals as extreme restlessness, sweating, difficult breathing, and cyanosis, it is usually time for interference. Every general practitioner should be able to do an intubation, but unfortunately few can do it successfully. I want to say, however, that the most skillful man I know in this line is a plain country doctor. He does the work quickly, skillfully, and most successfully. As soon as the patient begins to breathe better, and he is sure the tube is clear, he removes the thread from the tube. If a tube is left with thread attached and anchored behind the ear, or with adhesive, it is a constant source of irritation, and is frequently the cause of the tube being dislodged.

There is a very interesting article in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION of Arpil 22, 1922, by Dr. Chas. A. Thompson of the Willard Parker Hospital, New York, entitled "The Removal of Diphtheritic Exudate from the Larynx." For this purpose he uses a straight applicator with a screw clasp on the tip to which a piece of gauze is firmly attached to prevent its being lost in the larynx. The withdrawal of the swab acts like the plunger in a syringe, bringing out mucus and pieces of membrane, and in some instances the whole cast has been removed. In fifty-seven cases thus treated, thirty-three did not have to be intubated. This requires a skillful operator, and is probably as difficult as intubation, but is worthy of our consideration.

Tracheotomy still has its advocates. I shall leave this mode of treatment with you for discussion, as I have never had a tracheotomy done, always preferring intubation.

It is important to remember that no form of diphtheria is more fatal than the nasal variety. It is essential that the nose be examined on each visit to a patient suffering from any form of the disease. If you find a serous or bloody discharge, you may suspect involvement of the nose. The membrane in these cases is frequently very extensive and requires large doses of antitoxin. In such cases, a few drops of some oily preparation dropped into the nose with a medicine dropper, or the use of an oily spray, will add greatly to the comfort of the patient. We should bear in mind that forcible irrigation of the nose should always be avoided as infectious matter may be forced into the eustachian tube, causing secondary otitis.

The nutrition of the patient is most important. As a rule, the food is poorly taken because of the pain caused by swallowing. In as much as small quantities are taken at one time, it should be given in as concentrated form as possible. Milk, fruit juices and cereal gruels are usually best taken. In bottle fed children, food given from a spoon is taken better, because of the discomfort caused by drawing on a nipple.

When the heart becomes weak, irregular, or intermittent, stimulation will be necessary. For this purpose three drugs are of signal value, strychnine, tincture of strophanthus, and alcohol. Since prohibition has cut out the latter, we rely on the other two, of which strychnine is probably preferable. No case of diphtheria should be considered to have run its course until the heart's action is normal, and the general condition good. Sudden death may come from over exciting a damaged or weakened heart, if proper caution is not

used. I recall a neglected case in which the membranes disappeared after two large doses of antitoxin. The patient was pale, with small pulse, and general weakness. Heart stimulant was given, with instructions to keep him perfectly quiet, and in bed. Three days later he was allowed to walk about the room. He lived only a few minutes after returning to his bed.

Broncho-pneumonia, especially in laryngeal cases, is a rather frequent complication and adds greatly to the gravity of the disease.

As soon as the diagnosis of diphtheria is made, the patient should be isolated, the family quarantined, and all children in the household immunized by a small dose of antitoxin. The specialist has rendered us a signal service in the removal of many diseased tonsils and adenoids. Diphtheria is rare in a child with a healthy throat and nose and, when it does occur, it is more amenable to treatment.

Now comes the assurance, on seemingly good authority, that diphtheria can be wiped out. This statement sounds strange to those of us who recall that a few years ago this disease was the most dreaded and fatal of all children's diseases. Before antitoxin was discovered, five out of every ten who contracted diphtheria died. To-day, with the general use of antitoxin, nine out of every ten get well Even with this improvement, over twenty-seven thousand people in New York State took the disease during 1921, and seventeen hundred died from it. Most of these children were under five years of age. It is now claimed that every one of these cases and deaths could have been prevented by the use of toxin antitoxin. This mixture is different from antitoxin used to cure diphtheria, which only protects the child for about three weeks. It is claimed that toxin antitoxin protects for years, and probably for life. Toxin antitoxin protection is obtained by the injection of a small amount of sterile serum into the arm once a week for three weeks. This is said to make the child as safe from diphtheria, as vaccination does from smallpox. Then, if every child between six months and five years of age should receive this treatment, diphtheria will eventually be wiped out. If this be true, a new and brighter day is beginning to dawn.

If this paper serves to impress upon you the importance of a closer observation of all cases of sore throat, the early administration of antitoxin in suspicious, as well as true cases of diphtheria, and the use of large and frequently repeated doses in the laryngeal and nasal forms, I shall feel that my efforts have been amply rewarded.

SOME REMARKS ON TECHNIQUE IN MIXING AND ADMINISTERING SALVARSAN.*

By JOHN J. GIESEN, M. D., Radford, Va.
Physician, St. Albans Sanatorium.

At almost every medical meeting, there is a paper or papers read on syphilis, which always brings forth a wealth of discussion. This disease is a popular subject with the profession principally by reason of the fact that the definite standards of therapy for it are constantly changing. However, this paper is not intended to discuss syphilis and it is not intended to discuss the therapeutic value of salvarsan. Long before Ehrlich introduced his "606" preparation, medical science recognized the value of arsenic as a treponemicide but knew no method of procedure wherby sufficiently large doses could be administered into the human economy and tolerated to act as such. Since the introduction of "606" and the demonstration of the fact that it could be safely administered intravenously, we have had at our command a remedy, which when properly used in conjunction with the "sheet-anchor," mercury, enables us ordinarily to satisfactorily and efficiently combat this disease.

Arsphenamine is now the official designation of the drug under discussion and it has been manufactured, since the war, in this country by several laboratories, under United States Public Health license. Salvarsan, or "606", is now the trade name for the arsphenamine prepared by one of these laboratories. However, the drug having been introduced and used for years under the name salvarsan, it is almost universally known by that name, and, for the purpose of clarity, the term "salvarsan" will be used in this paper and should be taken to mean any of the arsenical compounds known as arsphenamine, manufactured under Public Health Service license, all of which, in

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my experience, are equal in therapeutic efficiency. Neo-salvarsan or neo-arsphenamine, while requiring a much less elaborate technique for preparation of the finished solution, admittedly does not equal salvarsan in therapeutic efficiency, for which reason it is not extensively used.

The treatment of syphilis with salvarsan, which is the principal use of the drug in this country, requires a technique more or less elaborate, essentially simple, yet fraught with danger both to patient and physician, if not properly prepared and administered. A few years ago, very few physicians administered the drug; some were afraid of it, some did not believe in it, others felt that the technique was so elaborate as to necessitate its administration by the specialist. Now, the majority of the profession can and do administer it, but with a variety of technique and with varying results and reactions. Very few patients receiving intravenous injections of this drug are entirely free from more or less severe reactions following its administration, ranging from slight nausea, through chills and fever, to severe shock (the Herxheimer reaction, so-called). The writer knows a number of individuals, syphilitics, who have received one or more salvarsan administrations at the hands of physicians, some of them experienced and some inexperienced in the use of the drug, and which patients have suffered so severely from reactions that they have refused to be treated further with it. He knows several patients who have suffered with slight to extensive "sloughs" following accidental leakage of the drug solution into the tissues, in one case the whole biceps muscle being involved. It is the belief of the writer that salvarsan can be administered without reaction and without discomfort or any danger to the patient. He believes that the various reactions, etc., obtained by many men and considered inevitable, are due to one, more, or all of the following errors in technique: (1) improper dosage; (2) improper mixing; (3) improper preparation and after-care of the patient; and, (4) improper administration.

Immediately before, during and after the late war, the writer, working with several of the syphilographers in Baltimore City, assisted in elaborating a method of procedure, which he believes eliminates these errors and which has given the writer excellent results in a series of 350 dispensary administrations in Baltimore City and 225 administrations at Saint Albans Sanatorium, to private patients, in the past three years. In these 525 cases, of which a record has been kept, there have been only a very few slight reactions, amounting to nausea; no moderately severe ones; and one severe one, with chills, shock and temperature elevation. The one severe reaction occurred in a patient who formerly suffered with amebic dysentery and was apparently cured, subsequently contracting syphilis. Following the first administration of salvarsan, there occurred apparently an exacerbation of the dysentery; there was severe shock, chills, high fever, rapid pulse, prostration and diarrhea. Appropriate therapeutic measures were instituted and the dysentery controlled, after which he was then given a four weeks' course of mercury, followed later by eight more salvarsan administrations, without a further semblance of reaction.

The technique or procedure referred to, which is the basis for this paper, can be classified in three groups and will be explained in that order, viz:

I. Mixing the drug.

II. Administering the drug.

III. Preparation and after-care of the patient.

I. Mixing the Drug.

1. *Selection of brand.* As herein before stated, any of the brands of arsphenamine manufactured under Public Health Service license are equally efficient and supposedly non-toxic. Some require cold and some warm solutions in preparation and dilution. We have used all of them and have no particular preference. Just as in the choice of the digitalis tinctures, however, it is well for one individual to become accustomed to one particular brand and to continue to use it in his work. Silver-salvarsan is a new preparation of the arsenical compounds put out by the Metz Laboratories. It is claimed by the manufacturers that it causes a more rapid disappearance of the lesions of syphilis than does the sodium salt. It has the further advantage that it requires no alkalinization. However, our experience is that it is highly toxic in some cases and, when used, its effects

should be carefully watched. We have noted several patients treated with it whose skin exhibited a dusky appearance, suggesting deposits of silver salts in the subcutaneous tissues. Inasmuch as its specific action on syphilis, particularly its influence on the Wassermann reaction, is no more marked than the better known compounds, we have declined to use it further at this time.

2. *Selection of dosage.* This is a matter entirely within the judgment of the physician and depends more or less upon the individual patient. Lesions of the heart or kidneys, syphilitic eye complications and long-standing infection indicate small dosage. Age, sex and body weight are also determining factors. The use of small doses, in all cases, frequently repeated, is much more preferable than larger less frequent doses. In our experience, doses larger than 0.4 grammes are unwarranted, except in a very few cases and, in every instance, the initial dose should be small and cautiously increased.

3. *Sterility.* Everything coming into contact with the drug, apparatus, solutions, hands, etc., should be surgically clean. All apparatus should be boiled in water to which has been added a few cubic centimeters of hydrochloric acid, which will prevent coating of the vessels and containers with lime salts. The diluting solutions should be absolutely sterile. The operator should scrub hands for five minutes with soap and water, followed by five minutes' immersion in 1:5000 bichloride solution and then rinse in fifty per cent. ethyl alcohol. We do not wear gloves except for our own protection in cases showing skin lesions. We personally know several specialists, who scoff at the idea of rigid surgical cleanliness in administering salvarsan, claiming that it is impossible to contaminate such a bactericidal solution; we further know that these men have patients who frequently exhibit chills after administration of the drug, which may be because living bacteria are thrown into the blood stream. We observe sterility carefully and our patients do not have chills. The ampule containing the drug salt should be immersed in a bowl of seventy per cent. ethyl alcohol to insure sterility of the outside and to further insure against contamination of the operator's hands when he opens the ampule. If there should be a crack in the ampule, which renders the contents unfit for use, this immersion will make it more readily noticeable.

4. *Alkalinity or Neutralization.* This is one of the most essential procedures in mixing salvarsan; improper alkalinization probably causes more reactions than any other one error. Our method is not the one recommended by the manufacturers of the drug and differs essentially in several ways. Pure sodium hydroxide is necessary. We use a solution of four times the normal and have it made up by a reliable pharmaceutical house and specify that it be stored in a bottle which has previously contained such a solution and that a rubber stopper be used. This solution, if carefully prepared from a chemically pure drug and pure distilled water, is perfectly clear, colorless and free from any sediment. If it becomes cloudy, dark or shows sediment, it should be discarded. The average drug store is unable to supply the proper solution. We secured this solution from Hynson, Wescott & Dunning, Baltimore, and have always found it to measure up to the standard specified. It has been determined by trituration with indicators that 0.26+ c.c. of four normal sodium hydroxide solution will exactly neutralize 0.1 gramme of salvarsan; therefore, 0.52+ c.c. will neutralize 0.2 grammes; 0.8 c.c. will neutralize 0.3 grammes, and proportionately for the larger doses. Our method of neutralization consists of emptying the contents of the ampule into a small, sterile, dry glass and adding all at once the entire amount, carefully measured, of the sodium hydroxide solution necessary to neutralize that particular dose of salvarsan. Note that this is done before any diluting solutions are added. The drug salt and the alkaline solution are intimately mixed and stirred with a glass rod and in a few moments a clear, bright yellow solution results. In cases where, as rarely happens, not enough of the alkaline solution is added to completely neutralize the drug, there will not be complete solution. In short, if complete solution is obtained between the salvarsan salt and the sodium hydroxide, neutralization is assured. Normal salt solution, or distilled water, as preferred, is then added to the desired dilution.

5. *Dilution.* The drug must be diluted before administration with normal salt solution or distilled water. Principally for purposes of convenience, we use normal salt solution exclusively. Distilled water, ordinarily, is just as good. Most authorities recommend not less than 20 c.c. of solution for each 0.1 gramme of the drug. We ordinarily use not less than 30 c.c. of solution for each 0.1 gramme of drug and believe that it should never be administered more concentrated than that. We find that the more dilute solutions are less irritating to the veins and that the greater bulk is just as readily taken care of by the blood stream and it spares the kidneys. The method of administering a dose of salvarsan in 5 or 10 c.c. of solution, advocated several years ago, is only mentioned to be condemned as very unpractical and unsafe. Our method of preparing the salt solution we use is to make it from freshly distilled water and chemically pure sodium chloride, boiled for 30 minutes, on three successive days. The solution will keep indefinitely. Distilled water, if used as the diluent, must be freshly prepared and carfully sterilized. The diluting solution should be either hot or cold according to the brand of drug used.

6. *Filtration.* The solution to be administered should be absolutely clear and free from particles of any sort. Thorough filtration alone can assure this. We invariably filter our solutions, after mixing and diluting, through coarse filter paper, which has been sterilized in the autoclave, just as gauze and linens are sterilized. We believe that the method of filtering through cloth, as commonly employed, is unsafe.

II. Administration of the Drug.

1. *Method.* The gravity method is used by us exclusively and has much to commend it, as will be explained. The bottle is suspended about four feet above the point of needle, which will give enough but not too great pressure. If the patient has large veins and a large needle is used, it is wise to lower the bottle to three or two and one-half feet.

2. *Apparatus.* We use apparatus which is not used for any other purpose. Everything is of glass except the hose and the needle. We use the ordinary gravity bottle, or cylinder, connected to four feet of one-quarter inch rubber hose (pure gum), which is soft and flexible and which contains several "windows." A Kaufman-Luer syringe is used. This is essentially a Luer syringe, on which at right angles is connected a short glass spout one-quarter inch from the middle neck of the syringe. The rubber tubing is connected to this spout and terminates at the other end in a glass connecting tube which joins the hose leading to the glass gravity bottle. A Luer slip large gauge needle is attached to the syringe; its bore may be adapted to the particular vein.

3. *Procedure.* The apparatus is first washed out with salt solution or distilled water and then filled with normal salt solution, after first expelling all air from the circuit, to just above the union of the hose and gravity bottle. The salvarsan solution is then poured in. If, on puncture of the vein and starting the flow, there is leakage of solution into the tissues, there being a few c.c. of salt solution in advance of the salvarsan solution, the flow can be stopped before any damage has been done by infiltrating the tissues with the drug. The needle is attached to the syringe and the subsequent manipulation is that of a Luer hypodermic syringe. The vein is punctured and when the plunger is pulled out gently, blood fills that part of the syringe in front of the glass tube at the side of the syringe, if the vein is properly entered; as soon as blood appears, filling the syringe, the plunger is pulled out further and at once the salvarsan solution enters by the side tube by gravity, driving the blood back into the vein, so that in a few moments the syringe becomes filled with salvarsan solution. The injection may be stopped at any time by forcing the plunger back, thus shutting off the side inlet. There is no danger of air entering the vein, for with this apparatus there is always a closed circuit. The Kaufman-Luer apparatus has several other advantages. The operator has perfect control of the flow, which is plainly in sight; there is no soiling whatever of the field by blood; asepsis is assured, for the needle need not be handled after sterilization, as it is manipulated and controlled by the syringe; avoidance of clot formation in the needle, for as soon as the vein is penetrated, the solution flows in almost automatically.

4. *Selection of Vein.* The median basilic or median cephalic are the veins of choice. Other veins of the forearm can be and frequently are utilized. In infants and young children, administration is sometimes made into the longitudinal sinus or into the jugulars.

5. *Puncture of the Vein.* This is ordinarily easy after a little practice. A tourniquet should be used; the patient should make a "fist"; the vein should be steadied by traction below the point of puncture; the needle inserted obliquely and in the direction of the venous stream. A few sharp slaps over the vein will often cause it to stand out prominently. Sometimes, in corpulent individuals particularily, the veins are deep and difficult to puncture. In others, who have had previous injections of salvarsan or other drugs, the veins are sometimes so-called "dried-up," or indurated, and are unfit for use. Proper technique will preserve the veins indefinitely, although repeated puncture of the same vein too frequently causes induration.

6. *Sterility of the Field.* Ordinarily, pure ethyl alcohol liberally applied over the field will suffice. Iodine is not essential and has other disadvantages.

7. *Rate of Flow.* It should be slow, the slower the better. We usually average between ten and fifteen minutes for the average injection. In some cases where the veins are small and a small needle is used, as long as thirty to forty-five minutes are required.

8. *Preserving the Veins.* We follow up the salvarsan solution with normal salt solution, using the following method; we have 100 c.c. of filtered salt solution ready and, just as the salvarsan solution is disappearing from the gravity bottle, have an assistant pour the saline into the bottle and allow most of it to follow the salvarsan into the vein. This has two advantages: it utilizes the salvarsan which remains in the hose and washes all of the salvarsan out of the local vein into the general circulation, thus preventing any local induration, which, when it occurs, renders the vein unfit for further intravenous medication.

III. Preparation and After Care of the Patient.

1. *Time.* We always administer the drug, when possible, in the early morning. However, the time of the day is more or less arbitrary. We believe that small frequent doses are preferable to larger, less frequent doses.

2. The patient is given a purgative the night before and is instructed to abstain from all food on the morning of administration. In the average case, the patient may eat a light lunch following the injection. We find that it is more essential to have the stomach empty when the drug is administered than it is to keep it empty afterward.

3. We put the patient to bed, administer the drug and then keep him in bed for at least several hours afterward. Cases which have shown a tendency on previous injection to reaction, we keep in longer. We inhibit undue exercise for twenty-four hours afterward.

4. For reactions of the mild type, when they occur, rest in bed, quiet and a dark room seem to do as much good as anything we have tried. In severe reactions, where there is shock, the usual measures should be instituted as against shock; adrenalin, hypodermically, works like magic in some cases. Slight or severe chills respond well to heat externally and hot drinks.

Recently, a preparation has been put on the market consisting of salvarsan solution, neutralized and diluted, sealed in vacuum ampule and ready for introduction into the vein. This preparation enables the average physician to administer the drug in his office without apparatus and without a working knowledge of the technique of preparing the drug. In our personal experience, this preparation decomposes rapidly and a larger number of patients suffer reactions from it than from carefully prepared freshly mixed solutions. It would appear that solutions of salvarsan, when neutralized, decompose or oxidize either in vacuum or when exposed to the air. The manufacturers of this preparation admit as much and warn on the label against administering the preparation should it show a certain shade of color, indicating decomposition. We have never seen an ampule of this preparation, even those fresh from the laboratory, which showed the brilliant yellow color of a freshly and properly prepared salvarsan solution. Where a physi-

cian is unfamiliar with the technique of mixing the drug and wants to administer it himself, we feel that it is vastly better for him to use this prepared solution, after satisfying himself that it has not decomposed, in preference to attempting to mix a solution with improper technique.

We feel that we have simply "hashed over" a number of facts and figures with which all of you are more or less familar and which those of you who administer salvarsan all probably use. The technique is brought to your attention in the hope that it will offer a point here and there which will be of some interest and of some help in avoiding reactions usually seen in patients receiving the drug.

From our experience with this drug, based on the statements enumerated herein, the following conclusion is drawn:

That, careful sterility; careful neutralization or alkalinization; careful filtration; proper dosage at proper intervals; proper dilution; careful administration; proper preparation and after-care of the patient, all combine to avoid unpleasant reactions and sometimes dangerous ones after salvarsan administration.

EMPYEMA OF THE MAXILLARY SINUSES, SECONDARY TO EXTRACTION OF TEETH.*

By ARTHUR HOOKS, M. D., Bristol, Va.-Tenn.

The number of cases under my observation for the last few months is my main reason for attempting to prepare a short paper on this important subject—important from the standpoint of the general health of all patients suffering with empyema of the maxillary sinus, who are carrying with them, over periods of months and years, fistulas through the alveolar process.

It seems very unfortunate that dentists so often drill into the antrum in cases of abscessed teeth, even when the wall of the antrum is intact; and in cases where the dental roots lie within the antrum, the tooth is extracted and the opening made larger, which establishes an avenue of infection from the mouth, through the fistula thus produced. The point I wish to emphasize is that dentists are attempting treatment of quite a large per cent. of these cases where a fistula is made through the extraction of the teeth, enlarging and irrigating through the fistula's opening instead of referring these cases to a competent rhinologist when first seen and thereby avoiding much suffering and many complications. The variation in thickness of the alveolar process, and the fact that drainage occurs in the mouth, together with the probability of re-infection from the mouth, are the serious objections to this method of treatment. Then, too, even though he does not attempt to cure the sinus, he only leaves a permanent fistula opening into the mouth which, without operation to close it, is fraught with much danger to the patient.

Anatomical variations are important because of the possibility of error in entering the sinuses. Should the facial wall be unusually flat or receding, entrance through the alveolar route would result in opening into the canine fossa; or, if the nasal wall were curved toward the antrum, the nasal floor would be reached by the alveolar operation. Therefore, it is very necessary to have an X-ray made of all such cases before an opening is made into the maxillary antrum through this route, in order to discover any anatomical variations and help to detect any diseased condition that might exist.

However, the expense of this procedure is often objected to, and refused, in which event I am guided by the physical signs. One could wish in such cases to obtain more definite information as to the character of infection by aspiration and subsequent bacteriological examination, and here again, the time necessary for it, and the expense is often objected to. Therefore, we often have to attempt a cure without these valuable aids in diagnosis.

The alveoli of some teeth, especially of the roots of the second bicuspid and the first molar, in the event of disease at the roots of these teeth, offer a route for entering the antrum by means of a drill, which should always be kept in mind when these teeth are being extracted, as the antrum is liable to be infected in this way.

The methods of infection of the antrum of Highmore secondary to the extraction of teeth that have penetrated the antrum have, it

*Read before the Southwestern Virginia Medical Society at its meeting in Pulaski, May 11 and 12, 1922.

seems to me, been divided by Dr. Harold Lyon, of Rochester, in a most practical way into three groups.

1st. Dental roots lying within the antrum, which, by their extraction, establish an avenue of infection from the mouth through the fistula thus produced. This condition is comparatively rare and, of course, unavoidable. It is far more rare than one would judge from reading a series of X-ray. The angle at which the rays strike the teeth and the shadow which is cast often indicate that a root is projecting into the antrum, but this is due to the angle at which the picture is taken. The infrequency with which roots are found projecting into an antrum, in radical external operations for chronic empyema, even in the hands of the most careful observers, bears out this fact.

2nd. The few cases in which the root extends to, and not through, the periosteum and mucous membrance of the antrum. After the extraction of the root, the soft tissues become infected and suppurate and a probe, inserted for diagnostic purposes, may accidentally penetrate into the cavity of the antrum. This, however, is rather infrequent.

3rd. Cases in which the wall and lining of the antrum are penetrated in the extraction of the teeth. In this group is classified the largest number of patients. The penetration occurs, first, as a result of the rocking movement of extraction, which tears into the antrum at the point immediately above and in contact with the root, and, secondly, on account of failure to extract all of the root, and, in attempting to place forceps around the remaining fragment, pressure is made for the purpose of pushing aside the soft parts, thus dislocating the root upward and penetrating the antrum. The condition is also commonly found following the older method of simple extraction, in contradistinction to the newer methods in which the soft parts are incised and the tooth lifted from its socket. As a matter of record, it was observed that the greater number of the patients in this group had had simple extraction of teeth, instead of modified open operation.

Fistulas.

Empyema and fistulas do not result in all cases in which roots extend into the antrum, for two reasons: the soft parts fall together in close proximity and heal by primary union, or the parts may be sutured together. If the passage between the mouth and the antrum closes unaided, or is closed by suture so that a dead space does not form in the soft parts, a fistula seldom occurs. The fact that food is continually forced into such an opening retards the immediate healing of the wound, because the particles work in between the line of union and force the edges apart mechanically.

The tendency of fistulous tracts is to close early; but, if they are allowed to remain open, or are kept open by packing, with rubber tubes, and so forth, they become lined by epithelium, and a permanent fistula, which cannot be eliminated by simple curettement, is the result. It is, therefore, an important surgical principle to use measures early which will aid in closing the tract.

In some cases the fistula may close by primary union, without aid or by suture, but an empyema of the antrum develops which pathologically is a small cell infiltration of the periosteum and mucosa, with a serous discharge. This latter becomes purulent, the mucosa becomes edematous, and the ordinary cycle of an inflammatory process results. The only difference (but an important one when treatment is considered) between an ordinary inflammatory process and an inflammation of the mucosa of the antrum is the fact that the epithelium of the latter is ciliated, and the active motion of these cilia is toward the normal ostium. Again, an important point is the fact that a fistula resulting from the extraction of a tooth is located at the lowest point of the antrum, and is, therefore, the easiest avenue for drainage from the antrum. This works against early closure of the opening because the drainage of the antrum is accomplished by gravity through it.

Treatment and Results.

Two general principles of empyema of the antrum have been mentioned, namely, drainage of the cavity at its most dependent part by the fistula, and the active motion of the cilia lining the antrum toward the median line. With these as basic principles, the exact treatment depends on the duration of the infection, its previous treatment, and the amount of alveolar necrosis.

In acute cases, the majority of antrum infections secondary to a dental root extraction will clear up with a modified Krause window resection in the inferior meatus, and suction and occasional lavage through this opening. The fistula, if small and slit-like, should be curetted gently; if large, it should be curetted gently and closed by sutures. Too active and too frequent lavage should be avoided, since suction will remove all fluid from the antrum. If lavage is used daily, it may water-log the membrane. The motion of the cilia tends to produce drainage through the nose. The kind of fluid used in lavage seems not to be important because its chief effect is simply the meechanical cleansing of the cavity and the stimulation of the membrane, which produces temporarily a somewhat richer blood supply.

In subacute cases, the same principles of treatment are carried out. The chief difference between the subacute and the acute cases is that infection of the antrum is of longer duration; the fistulous tract probably has become lined with epithelium, and therefore will not close by simple means. Lavage may be used more often than in acute cases, and the modified Krause resection should be made large and as low as possible. The fistula should be thoroughly curetted in order to give it an opportunity to close. A surprising number of subacute cases clear up by these simple measures. If the fistula does not close, three measures are available. (1) simple suture of the opening after excising the lining of the tract;(2) a radical plastic operation; and (3) the use of a temporary denture, if the tract is very small.

In the plastic closure, the operation may consist simply of trimming the edges for a short distance in all directions, curetting any underlying necrosed bone, and closing by sutures over soft sterile rubber tubing to prevent the suture from cutting. If the tract is large, a more radical plastic operation may be necessary. Since in such a case the soft tissue over the hard palate is available, an incision near the middle line of the hard palate will allow that entire side to be elevated and brought over the fistulous opening, which has been excised and curetted. Closure may be made as described. A denture is made in acute and subacute cases in an attempt to keep the food particles out of the fistula. The denture is fitted as perfectly as possible, and should be removable so that it may be kept clean. It is attached to the teeth on each side of the opening and, of course, is not made with a projection into the fistula. As a rule, such a denture is difficult to make because, if food and liquids escape into the area of the fistula, its purpose is not accomplished.

In chronic cases, the same procedure is carried out. These cases are characterized by the presence of chronic infection of the antrum, and the epithelium-lined fistulous tract. Here, again, by relatively simple means, the antrum often clears up rapidly and the fistula closes. It is, therefore, advisable to employ the conservative measures for some time before attempting the more radical.

In protracted cases in which treatment is resisted, a radical external operation on the antrum, with excision of the fistulous tract and radical plastic closure, may be necessary.

In all of the cases studied, with eight exceptions, the condition cleared up by simple means. A radical plastic closure of the fistula was necessary in four cases; a Denker operation was required in one; dentures were used to keep food from the tract in two; and the condition rapidly cleared after an adjacent infected tooth had been extracted and the alveolar necrosis curetted in one. The rubber tubes sutured into the antrum through the fistulas were, of course, removed; in one case a long strip of gauze was also removed.

The average course of treatment in the clinic was twenty-six days; the shortest was four days, and the longest three months and ten days. The ulimate result, that is, if the antrum remained clear, or if the fistula remained closed, was judged from the answers to the questionnaires, which showed that the fistula is patent in eight of the patients. On first thought this might appear to be a high percentage of failures; but, on the other hand, since only four plastic operations were performed, it illustrates the fact that even long-standing chronic cases of empyema of the antrum with fistula can be cured by relatively simple means. Undoubtedly, some of these eight patients with failures might have been cured by simple plastic operations. The results indicate the wisdom of the modified Krause window operation, followed by simple

measures, and the folly of irrigation and treatment through the fistula.

CONCLUSIONS.

1. Treatment of infection of the antrum through an alveolar fistula does not seem advisable.

2. If the antrum has become infected, adequate intranasal drainage gives infinitely better results.

3. Care should be taken to avoid the formation of a permanent alveolar fistula.

4. An alveolar fistula may be closed after treatment has cleared up the empyema of the antrum.

26 *Fourth Street.*

TONSILLAR HEMORRHAGE.*

By L. LEROY JONES, M. D., Portsmouth, Va.

Of all operations performed by medical men, the most frequent is that for the removal of tonsils and adenoids. The subject may be suffering from signs and symptoms of interference with physical and mental developments, lower state of resistance of the digestive system, systemic infection, ear disturbance and, as a consequence, may be reduced to partial invalidism. The operation is rarely urgent, but is usually a matter of expedience. These two facts, namely, the frequency of the operation and the comparatively healthy state of those undergoing it, make it imperative that we choose the best mode of procedure to eliminate as far as possible all attendant risk. The most notable risks encountered are those associated with the general anaesthetic, when such is used, and the post-operative hemorrhage. This paper is concerned solely with the latter.

Some degree of hemorrhage is an inevitable part of every operation on the tonsils, in which their nutrient vessels are severed. In the average case, the bleeding ceases in a few minutes and the total amount of blood lost is within fairly moderate limits, and hemorrhage beyond this amount, and which is sufficient to cause alarm, risk of the life of the patient, is due to something unusual in the source of bleeding, either anatomical, pathological or surgical, or to certain factors which inhibit normal clotting and physiological arrest of hemorrhage. I am going to discuss briefly the factors that should be thought of prior to and at the operation where there is blood lost beyond the average, usually resulting from a technically perfect, surgical procedure. First, age is a factor that is generally admitted, profuse hemorrhage being probably more frequent in adults than in children. In this connection, we think of increased vascularity, the fixation of the vessel walls as well as disease of the vessel walls, such as arteriosclerosis. High blood pressure is a factor to keep in mind, also conditions which impair the ability of the blood to coagulate.

It is my opinion that sex has no influence up to the age of puberty, apart from the hemophilia. Beyond this age, females are more prone to anaemias and blood changes that are likely to impair clotting. Beyond the fourth decade, males are more prone to the diseases of the blood vessels associated with alcoholism, tobacco, nephritis, syphilis, etc. Short-necked, florid patients are usually more full-blooded and bleed more freely. I believe that it is safer not to operate on females during menstruation as a hemorrhage may act vicariously for the menstrual period and it is reasonable to think there is temporary diminished coagulability of the blood approaching the menstrual time. However, on investigating several works on gynecology, I failed to find any light on this point.

Abnormal vessels, concealed types and vessels of large calibre, may enter the tonsil direct without first subdividing, forming anomalous tonsillar arteries. I think that it is said that approximately one case in seventy-five has an anomalous tonsillar artery, so it is of vital importance to bear this in mind.

THE INFLUENCE OF OPERATIVE AND ANESTHETIC TECHNIC UPON SERIOUS HEMORRHAGE OF THE TONSIL

As far as I know, any technic may be followed by serious post-operative hemorrhage. To discuss the technic of all methods in relation to such a complication would demand far more time than is at my disposal, and would be of little value. As far as I have been able to determine, there is no relationship between the anaesthetic used, whether local or general.

TYPES OF HEMORRHAGES: Primary, occurring at the time of operation; post-operative, coming on a few hours after operation (which is usually a continuation of the primary un-

*Read at a meeting of the Norfolk County Medical Society.

checked); and secondary, occurring between the fourth and seventh days. Quite frequently *primary* hemorrhage may be brisk for a few seconds, but generally ceases spontaneously in 3 or 4 minutes. Pressure properly applied will check capillary bleeding and, if kept up long enough, will control hemorrhage from larger vessels. Pressure is made in various ways, the most frequent, generally used method is gauze sponges in sponge forceps. After pressure is made for a few minutes, should there be vessels that continue to bleed, they should be sutured, or dealt with by other means. In suturing the vessels, it is desirable to have the fossa fully exposed by the use of a pillar retractor, and good illumination, and, as a rule, there is little difficulty in placing the ligature around the bleeding vessel. I believe that the innumerable drugs and preparations (to quote Dr. Joseph White), are more or less worthless when we are dealing with real hemorrhage. Rarely we find cases in which there is a general oozing from the tonsil fossa and the separate bleeding vessels cannot be found. In such cases, when the various preparations used fail to give results, suturing a gauze sponge in the fossa for 24 hours will frequently control the bleeding. Should such an oozing be due to delayed coagulation of the blood, as for instance, in the hemophiliae, the ideal treatment would be transfusion, should a desirable donor be available. If such treatment is not practical, we usually resort to intravenous use of horse serum and the various other hemostatic serums.

Post-operative Hemorrhage: I believe in a majority of cases post-operative hemorrhage is simply a prolonged continuous affair of the primary hemorrhage. In other words, when a tonsil operation is complete with both tonsil fossae dry, it is to my mind the exception, and not the rule, to have a post-operative hemorrhage. However, in spite of every care, we have to cope with it occasionally. The first evidence noticed is that the patient vomits a quantity of bright blood, and my hospital orders are always to notify me immediately when such happens. The throat is always to be inspected when there is such an occurrence. If ignored, the vomiting will, most likely, occur two or three times and the patient becomes weak and fainty and we have to deal with the effects of a severe hemorrhage. It might be worth while to mention here the difference between the above-described type of vomiting and the type that is occasionally seen from nausea, due to the anesthetic. When the patient leaves the operating room with a dry throat, the blood is scanty and dark. It is very important to describe in detail this differentiation to all pupil nurses, in order that they may know when, and when not, to make an immediate report. I think that every patient should be laid on one side with the face in a semi-prone position, so that any blood from the pharynx may gravitate to the mouth instead of the stomach. When hemorrhage is found to be in progress and the patient in a fainty condition, general treatment for acute anaemia should be instituted. If, on inspection, one fossa contains a clot, the bleeding is from this side. If both contain clots, then both are bleeding. The clot should be removed and the blood vessels dealt with as described above.

Secondary hemorrhage, occurring usually from the fourth to the seventh day after operation, ordinarily is not serious and is caused by opening of small vessels when the white film, which lines the fossa after tonsil operation, begins to slough off. To remove the clot and make gentle pressure in the fossa for a few minutes is, in the majority of cases, sufficient to control this type of bleeding.

Professional Building.

CESAREAN SECTION:

Its Indications and Limitations.*

By R. P. KELLY, M. D., Lynchburg, Va.

In considering this subject, I have in mind the classic operation, and what I shall say refers chiefly to this operation, since few men, in this part of the country, are doing anything else. I realize that certain contraindications to, or limitations of, the classic, or corporeal, cesarean section may be more or less extended when we do the low, or cervical cesarean section as practiced by Dr. De Lee, of Chicago Lying-In, and others.

In considering my subject, I shall call attention to these conditions, in the course of the discussion, as they present themselves.

Classic cesarean section is performed entirely too frequently and, often, without a clear conception of the indications for and against the operation. In fact, many of the

*Read at the thirty-fourth meeting of the South, Piedmont Medical Society, at South Boston, Virginia, April 18, 1922.

papers we have heard, or read, on the subject have been on indications for, while very few have mentioned the limitations of the operation. It would seem, on the contrary, that quite a few are eagerly waiting an excuse which will *seemingly* justify resort to this spectacular but simple operation, not seriously considering the large mortality it carries, but desiring more the glory and advertisement it affords, if any.

There is no obstetrical operation which is fraught with such a large maternal mortality as that of cesarean section; consequently, if possible, we should always seek some other means of delivery, reserving this operation for those cases in which, as a rule, the indication is well defined. Let me state, however, there are occasionally border-line cases in which the question is quite a difficult one to decide.

Just a few words about the mortality and morbidity. On this point I wish to quote from a paper of De Lee on "The New Methods of Cesarean Section: Report of Forty Cases," read at the A. M. A. meeting, Atlantic City, June 1919, in which he says:

"Accoucheurs of experience know that cesarean section is not so safe. They know that their good results are due to the careful selection of the patients submitted to the operation. They have observed numerous fatalities when proper strictness was not observed in deciding on the abdominal delivery. F. S. Newell said he knows that in several towns around Boston, the mortality (unpublished) from cesarean section has been frightful. He reports eight deaths in 100 cases at the Boston Lying-In Hospital up to 1909. Amand Routh, in 1910, found a general mortality for England of from 2.2 to 34 per cent., depending on the condition of the mother at the time of the operation. Gragin had 143 clean nontoxic cases with three deaths. Williams believes the general mortality will be 10 per cent., and only in the most ideal surroundings and, at the beginning of labor, will it be from 1 to 2 per cent.

"In Chicago, deaths due to cesarean section not infrequently occur but are not put on record, and recently the newspapers of a certain county of the State published a successful cesarean section as a wonderful achievement, the woman being the first to survive the operation in the county.

"There is an unavoidable mortality to cesarean section. It increases: First, with the length of labor; one might say about 1 per cent., every two hours; second, with the number of vaginal examinations made, or operations attempted; third, with the rupture of the membranes; fourth, with the lack of skill of the operator. Furthermore, there are certain women who carry infection in the vagina —harmless there, but fatal if brought on to the peritoneum. There is no way of discovering it beforehand. Leopold, of Dresden, found gonorrhea in some of these cases.

"In addition to the mortality, the classic cesarean section has a distinct morbidity. Just as the mortality has been gradually reduced by proper selection of the cases, by operating early, by refinement of operating room technic, etc., so has the morbidity been reduced—but not in like proportion. A large proportion suffer from peritoneal shock. In fully 20 per cent. of the cases there is fever after opertaion. Uterine abscess occasionally follows, partial paralytic ileus and gastric dilatation not seldom occur, adhesions of omentum or intestine to the uterine or abdominal scar are the rule, and the danger of rupture of the uterine line of suture in subsequent labor is still a real one. The five main objections to the classic cesarean section are: (1) the inherent mortality, (2) the frequency of abdominal complications, (3) adhesions, (4) rupture of the scar in subsequent labor and (5) the necessity to restrict the operation to clean cases."

In view of this, we should most conscientiously consider the possibilities of a fatal termination; we should take into account every questionable point, both for and against, with due regard, not only for the present but also for the future health and happiness of the patient.

As a rule, I do not think the general surgeon is the person qualified to decide upon the question of cesarean section. The obstetrician is the person to be called for such cases. Often the surgeon is too inclined to operate, not so much because he is a surgeon, but because he is not an obstetrician, and because cesarean section is often the only and easiest way he knows of getting out of obstetrical difficulties. Let me emphasize the importance of calling in the obstetrician, *not late but early*, and, above all, where there is the slightest suspicion that something is wrong, those referring cases should observe the strictest asepsis in making examinations. Every one doing obstetrics should train himself to do rectal examinations on his patients. The obstetrician

and not the surgeon, or general practitioner, as a rule, should do these operations.

The indications for cesarean section may be divided, for consideration and discussion, into the *Absolute* and *Relative*, this classification being based on the length of the conjugata vera.

The question of cesarean section has arisen among obstetricians and surgeons when one of the following conditions has been encountered.

First: Contracted pelves, which vary considerably as to the degree of contraction or deformity.

Second: Oversized child with a normal pelvis, which gives us practically the same condition as that just mentioned.

Third: Obstruction in the lower birth canal to the passage of the child, as tumors, congenital deformities, etc.

Fourth: Severe toxemias of pregnancy.

Fifth: Placenta previa.

Sixth: Abruptio placentae.

Seventh: Organic diseases, such as severe cardiac diseases, or tuberculosis.

Eighth: Breech, face, brow, transverse and occiput posterior presentations and positions, in primiparae, especially.

Let us now take up these conditions, with an effort to analyze them briefly. About 80% of the cases with contracted pelves will deliver normally, if left alone. Therefore, in every case, we should very carefully determine, or estimate, the amount of disproportion between the baby's head and the mother's birth canal. If, after careful pelvimetry, both external and internal, and careful estimation of the size of the baby, we are still unable to decide upon the best method of treatment, we should give the patient a *test of labor*. In arriving at our decision we should also consider the moldability of the head, which is very important, and the character of the pains. Of course, when the conjugata vera is 6½ c. m., or below, the indication is *absolute* and cesarean section must be done. Not even a pubiotomy is considered, since this operation is limited to cases where the conjugata vera is above this figure, and, besides, is a very dangerous operation.

The cases which are most difficult to decide are those with a conjugata vera of from 6½ to 9 c. m., but many of them will deliver spontaneously if left alone. In the cases from 9 to 10 c. m., normal labor is the rule.

The patient's condition must be disregarded when the indication is *absolute*, for here it is *too great a risk for the mother* to attempt delivery by any method other than cesarean section. Should there be any infection, the uterus, too, should be removed, or a low cervical cesarean should be done.

The *relative* indication is seen when we decide that the safest way for *both mother and child* is to deliver by cesarean section. However, the condition of the patient must be carefully noted—whether or not she can be brought to a hospital: whether or not she has had numerous vaginal examinations, especially by unclean hands: whether or not efforts to deliver have been made by the application of instruments, etc.: whether or not the membranes have long been ruptured: and whether or not gonorrhea is present. Should there be infection *of any kind* the *relative* indication for classic cesarean section is no more, and we should find other means of delivery. Again, a Porro, or the low cervical cesarean section may be done with sterilization of the patient, if indicated.

The *relative* indication would also take into account the cases of placenta previa, eclampsia, and practically all other cases which would be treated by cesarean section, assuming the conjugata vera diameter not to be a factor. Again, our indication would be relative in a case of overgrowth of the child and a normal pelvis, even though the patient had formerly been delivered normally. In all cases, we must, as nearly as possible, estimate the relative size of the *passage and passenger*. If we do this, we can forget the classification, for, after all, in a given case, it is not so much the size of the baby or the size of the pelvis, but the *relation* of one to the other, upon which we must base our treatment.

We can hope to obtain the best results only by very careful prenatal care, and by careful study of the pelvis in every case of pregnancy we attend, regarding the shape and size of the inlet, exostoses and thickening of the sac-

rum, and contraction of the outlet. Many cesarean sections can be prevented by this prenatal care, by induction of labor shortly before term, and, in some cases, perhaps, diet may help. We, who do obstetrics, are responsible, through our neglect of this prenatal care, for many of the cases which are delivered by cesarean section.

When we encounter definite obstruction to the passage from tumors, etc., again we have no alternative, the indication is *absolute*.

As to eclampsia, I feel sure some of you will agree with me while others may not. Personally, I do not consider eclampsia as an indication for this operation. We might make one exception, at least, to this rule,—the case of a *primipara* with a rigid, undilated os, who shows no sign of improvement after free venesection (Williams). In these cases, as Williams states, the operation is more conservative than forcible attempts to dilate the cervix manually or by instruments. Dr. Williams says that *once in about* 15 *or* 20 *cases* of eclampsia he considers the operation indicated.

The conservative treatment of these cases has proven to be much safer for both mother and child. In the cases treated by cesarean section there has been a maternal mortality of about 20%, and a high fetal mortality. By the conservative treatment we have reduced this mortality to about 10%, with a corresponding reduction in the still-birth rate. I presume you all know what is meant by "the conservative treatment" of these cases.

Placenta previa, like eclampsia, has been, and is, the excuse for too many cesarean sections. Generally speaking, this, too, is not an indication for cesarean section. Occasionally, however, operation is the best method of dealing with the condition, especially in cases of complete placenta previa, with an undilated cervix and profuse hemorrhage. The best general means of treating these cases is the bag, followed by a version, as they control the hemorrhage and dilate the cervix.

In abruptio placentae, as in placenta previa, there might occasionally be a case in which cesarean section would be the best means of treatment in interest of the mother. About 95% of the babies are lost and 50% of the mothers. I should say that where the hemorrhage is severe and labor has not begun, when the cervix is not dilated, or easily dilatable, cesarean section, or a Porro operation, would be indicated.

It might occasionally be possible that some organic disease, especially heart disease, would render cesarean section the safest method of delivery for mother and child.

Transverse, breech, face, brow nad occiput posterior presentations and positions have too often been the *excuse* for cesarean section. These cases should best be treated by early recognition, and timely correction. As Williams says, one can readily see the advisability of the operation in neglected cases, but the sad part is that *not only* has the *condition* often been neglected, but also the asepsis, so that, even in such a case, we have a most serious contra-indication, *unless* a low cervical cesarean section were performed. Should classic cesarean section be done under these conditions, the uterus too, would have to come out, and it would be a question whether or not, in such a case, we would be justified in doing so radical an operation to save a child that would probably die from the long neglected original condition. If we had a contracted pelvis to deal with, or an oversized child, the situation would be altered.

Before doing a cesarean section, we should be absolutely sure the child is alive. I saw one of the best men in the country err on this point. The baby was alive Sunday night at 10 o'clock. The operation was scheduled for 9 A. M. Monday. The operator thought the child was living because he had heard the fetal heart that night before—but, imagine his embarrassment when he removed a dead baby from the uterus. The lesson from this is—*always* listen for the fetal heart immediately before operating.

The objection to a test of labor is that our mortality increases with every hour of labor, about 1% every two hours; we should, therefore, attempt to make our diagnosis before labor begins, or shortly after, because after the second stage is well established, our mortality is 10% or more. Dr. Williams' total

mortality, all cases included, up to a few years ago, was 8% but, in the cases done at the "*time of election*," he had only one death.

The contra-indications for cesarean section are, to my mind, *equally as important* as the indications for the operation. They may be outlined as follows:

First: Cesarean section is contra-indicated in a patient who has become exhausted by a long labor, unless we give her a good rest by the use of morphine.

Second: Classic cesarean section is contra-indicated in a woman who has had any intra-uterine manipulations, or who has had numerous vaginal examinations.

Third: Classic cesarean section is contra-indicated in any case with long ruptured membranes, and who has had even one vaginal examination by a physician or a midwife whose technique is questionable.

Fourth: Classic cesarean section is contra-indicated, or unnecessary, in abnormal presentatinos, as face, brow, breech, transverse and occiput posterior, especially since Dr. Potter has shown us how to deliver the shoulders, arms and head in versions.

Fifth: Classic cesarean section is contra-indicated, or unnecessary, in cases of abruptio placentae, placenta previa and eclampsia, with few exceptions.

Sixth: Temperature is a contra-indication for the classic operation, unless we can prove positively that it is not due to uterine infection.

Seventh: Classic cesarean section is contra-indicated in cases of gonorrhoeal or syphilitic infection, since general peritonitis is likely to follow in the former case, while death of the infant may follow in the latter. 17% or more of still births being due to syphilis.

Eighth: Poor operative risks, such as thyroid cases, or very fat women, would be a deciding factor against delivery by cesarean section.

To sum up the question: As McPherson puts it, cesarean section is a very useful operation for removing the child from the pregnant woman at or near term. First: when there is a relative disproportion between the birth canal and the baby, sufficient to render the birth extremely difficult or impossible. Second: in case of serious obstruction of the birth canal due to tumors or deformities, congenital or acquired. Third: In occasional cases of placenta previa, abruptio placentae, eclampsia, or organic disease.

Finally: I feel quite certain that we may reasonably expect almost perfect results from our cesarean sections if we follow the above suggestions in considering the treatment of obstetrical complications.

705 *Church Street.*

PROGRAM FOR MALARIA CONTROL IN VIRGINIA.*

By ROY K. FLANNAGAN, M. D., Richmond, Va.
Assistant Health Commissioner.

The malaria control work of the State Board of Health is conducted in co-operation with the International Health Board of the Rockefeller Foundation and the United States Public Health Service. The general supervision falls to the Assistant Health Commissioner in his capacity as Director of the Bureau of Rural Sanitation.

Dr. Clinton A. Kane is State Director and P. A. Surgeon Louis L. Williams, Jr., has been assigned by the U. S. Public Health Service to co-operate with the State Board of Health in its anti-malaria program. These two officers have collaborated on a program for malaria control and have made much progress in carrying it out. L. M. Clarkson, Sanitary Engineer, is charged with the direct supervision of the engineering features of the control work, and Miss Harmon is office Secretary.

The program comprehends the selection of a group of counties in which the work is first to be prosecuted, taking if possible seven infected counties yearly, the work to proceed along the following lines:

1. Educational and publicity work.
2. Collection of malaria and mosquito statistics.
3. Close co-operation with all public officials, health officers, doctors, corporations or citizens wishing advice or assistance in malaria control.
4. Town and suburban malaria control work.
5. Rural malaria control work.

*Read before the Virginia Conference of Social Work, Danville, Virginia, May 8, 1922.

6. Follow-up of work previously done, the compilation of statistics and appraisement of results and new surveys.

Educational and Publicity Work.

1. *Course of study and literature.*—Realizing that the children must be instructed, if permanent and progressive health work is to be done, a ten weeks' course of instruction as to malaria and malaria control has been worked out for use in the schools of infected counties. The course covers one hour weekly, and has been adopted in the schools of the counties now being worked: namely, James City, Isle of Wight, Nansemond, Brunswick, Southampton, Princess Anne and Norfolk. The teachers readily co-operate and, since February, 279 schools have given this course and held examinations thereupon after completion. In these courses malaria charts and catechisms were freely used, and specially prepared bulletins on malaria were placed in the hands of the children for home distribution. As an addition to the courses, demonstrations in malaria control are given by the officers to as many schools as possible during the season.

2. *Lectures and pictures.*—Lectures are given by various members of the State Board of Health at strategic points and moving pictures on mosquitoes and drainage work are to be shown throughout the whole Eastern section of the State. In many of the counties, this part of the program has been carried out. A special moving picture has been prepared showing before and after work in malaria control. These pictures always receive an enthusiastic reception.

3. *Newspaper articles, posters and exhibits.*—Newspaper articles are systematically furnished the local papers. Posters are placed in stores, banks, hotels, public buildings and railroad stations, and tin signs giving instruction are posted on trees and fences along the roads and near every public gathering place throughout the campaign counties. Exhibits are held at schools, public gatherings, chautauquas, and county fairs.

Collection of Malaria and Mosquito Statistics.

1. From doctors—reports and statements.
2. From officials (nurses and health officers included.)—
3. From schools—teachers' reports on children.
4. Record of drainage work and other mosquito measures previously taken.

(Complete malaria census started in 1921 to be continued from year to year).

Co-Operation With Public Officials, Health Officers, Doctors, Corporations and Citizens.

Team work is more essential in the control of malaria than in any other disease and it must be secured completely in order to insure results. No other disease, however, responds more readily to co-operative effort. Public officials are first approached, for against their opposition nothing can be accomplished. Health officers are expected to take initiative in inviting aid and their co-operation is usually taken for granted. Doctors are counted upon to furnish the data upon which the campaign is based, their active help is essential in getting the people to back up malaria control plans and to carry out the treatment program so necessary for ridding the community of carriers of the disease.

A malaria ridden district is a poor district and though people are sickly they very frequently cannot pay doctors' bills. That malaria is not essential to the prosperity of the medical profession is clearly shown in the wide areas of the State free from this disease. Enlightened self interest, therefore, on the part of the doctors would impel them to aid in an anti-malaria campaign, simply on the ground of less work and more pay. The humanitarian and patriotic reasons for their co-operation so overwhelmingly apparent, however, usually place them heart and soul with our officers in their efforts to banish this disease.

The co-operation of the railroads, manufacturing corporations, lumber mills and other industries employing labor within infected districts is always solicited, and they almost invariably see that it will be greatly profitable to them to banish a disease that causes so much loss of time from work. Their aid is, therefore, very freely given.

Town and Suburban Malaria Control Work.

In such towns within the campaign area as present a definite malaria problem and that are willing to co-operate financially with the

State Board of Health in malaria control, co-operative demonstrations are being made. This financial co-operation is rendered possible by aid furnished by the International Health Board. This Board appropriates $6,500.00 this year for malaria control work in Virginia in addition to the sums it gives for the promotion of rural health organizations. This amount is matched by an equivalent amount from the State Board of Health, making a joint fund of $13,000.00. Five thousand dollars of this is segregated for town and suburban malaria work. The towns aided are required to match Bureau funds dollar for dollar. Under this plan the towns of Smithfield, Lawrenceville, Oceana, Suffolk and Ocean View are now co-operating. West Point and Emporia having previously accepted the plan, are now enjoying unwonted freedom from mosquitoes and malaria in consequence. Much drainage work is being done with the use of dynamite, which proves much cheaper and more expeditious than the old man-ditching method.

The program used in conducting anti-malaria work in a town consists of the following.

1. A malaria census is taken.

2. A survey and estimate of cost and of work to be done is made.

3. The most practicable method of control is adopted.

4. The work is then done under supervision of the engineer of the malaria bureau and the officials of the town or city.

The items of malaria control work wherever done are (a) ditching, i. e., cutting or blasting out trenches through swampy areas to drain the larger mosquito breeding areas. (b) Brushing, i. e., cutting down undergrowth and grass along streams and ponds so that fish and other water enemies of the mosquito can easily get to them while in the wiggler stage. (c) Introducing mosquito eating minnows into streams and fresh water pools. (d) Filling in the smaller pools that cannot possibly be drained. (e) Oiling. Kerosene oil may with satisfaction be used on smaller pools, rain water barrels and in drip cans. (f) The use at times of mosquito killing preparations (larvacide). (g) Screening homes and other houses (16 mesh wire). (h) Treatment of cases and carriers with quinine.

Rural Malaria Control Work.

1. This consists in locating all breeding places of malaria-bearing mosquitoes and making spot maps of the areas involved.

2. Concise report on most feasible methods of control at each location.

3. Inducing control through county officials, land owners, householders, road builders, railroads and industrial plants.

4. Anticipating and preventing future man-made breeding places.

5. Inducing physicians to adopt and use (where not previously done) only the standard malaria treatment recommended by the National Malaria Committee.

6. Inducing druggists and stores to handle the standard treatments and not to sell "chill tonics."

7. Establishing quinine stations where needed.

8. Aiding in the formation of county health departments that this work may have intelligent supervision and direction and upkeep when the immediate needs of the situation are met and the malaria squad has gone.

Follow up Work Done—The Making of New Surveys—Rendering Reports and Compiling Statistics.

Malaria control work, necessitating as it does much ditching and screening and co-operative work, must be closely followed up or it soon goes to pieces, ditches fill up, screens wear out, people get careless and need to be reminded of their duty to themselves and the public. All malaria campaign programs projected provide for systematic visitation, continued education and funds for maintainance of drainage work. The public is demanding more and more of the Malaria Control Bureau, and hence new surveys are being made as time or opportunity is afforded. It is absolutely necessary, of course, in order to keep track of the work that prompt, full and regular reports be made of it, and that accurate statistics be compiled.

This program is being purused with vigor, and as an evidence of its need and popularity, more towns are asking aid from us than the funds in hand permit us to give. Great satisfaction is expressed by citizens at the rapid progress being made in the localities where the work is being done.

The great need in malaria control is money, and as the people wake up to the dividends returnable in health and increased prosperity by its proper expenditure in such work, malaria in Virginia will disappear entirely and many fertile areas in the State now thinly settled will be occupied by healthy, prosperous citizens.

TUMORS OF THE MAMMARY GLAND.

By NUMA D. BITTING, M. D., F. A. C. S., Durham, N. C.

Tumors of the mammary gland, for the sake of more intelligent study and treatment, have both clinically and pathologically fallen into the benign and malignant classifications. Some eminent specialists have minimized the importance of dealing radically with the benign group, depending upon their diagnostic ability to determine which types may or may not undergo malignant degeneration. Certain clinical signs are definitely diagnostic of cancer when present, but these signs may not appear until the cancer has existed for some time. Just when a benign tumor begins to undergo malignant changes cannot be definitely stated, and it is oftentimes too late to relieve the patient when these positive signs appear.

As to the etiological factors producing breast lesions, but little can be positively stated. We have been able to trace a few growths to direct injury and infection. Pregnancy and lactation predispose to tumor formation, and tend to greatly aggravate existing breast lesions. Investigation of our records shows that the majority of growths mysteriously appear, and the patient accidentally discovers a lump in the breast. The menopause may play some part in the production of tumors, but, so far as we have been able to ascertain, no authorities have been able to prove the relationship. However, benign tumors are rare after the menopause, and malignant tumors are much more frequent.

Age has for a long time been regarded as an important factor in the diagnosis of breast tumors. It has seemed to establish a rather definite time, before which malignancy rarely occurs. In the majority of cases, the tumor is benign before twenty-five years of age. In very rare instances, malignancy has been found to exist in the adolescent stage. Bloodgood reported a group of 885 malignant tumors in which 3.9 per cent. were under thirty years of age, and only one case was as young as twenty-one years of age. The length of time a tumor has existed has no direct relation to the question of malignancy, and should not be taken as a guide. Tumors that have existed for many years and showed no signs of growth may quickly undergo malignant changes and rapidly advance beyond the curative stage.

The diagnosis of tumors of the mammary gland determines the plan of surgical procedure to be carried out in each individual case. To differentiate the benign from the malignant and the operable from the inoperable malignant growths is of great importance both to the patient and the surgeon. Benign tumors may be in some cases differentiated from malignant tumors by their clinical characteristics. They are usually, but not always, encapsulated and freely movable. There is no attachment to the skin nor retraction of the nipple. They are often multiple and occur early in life. Discharge from the nipple may be present but is not a constant sign. Pain may or may not be present.

Malignancy may be suspected when the tumor produces dimpling of the skin and retraction of the nipple; malignant tumors are usually fixed but may be movable when seen early and are non-encapsulated. They often infiltrate the surrounding tissues. Ulceration of the nipple, as in Paget's disease, when present, is a positive sign. The malignant tumor is usually single and rarely multiple. Enlargement of the axillary lymphatics should not be taken as a constant guide, as it is found in benign as well as malignant conditions. Besides, it cannot always be felt when associated with malignancy until late in the course of the disease.

Early diagnosis and early treatment of breast tumors are the points we wish to stress most. We do not share the belief of some surgeons that benign tumors can always be differentiated from malignant and that operation in the benign cases is not indicated. As soon as a tumor in the mammary gland is discovered, the doctor should endeavor to determine whether it is benign or malignant. If the signs as above outlined point to cancer, the radical operation should be performed at once. If the tumor appears to be innocent or of doubtful character, it should be removed—not a portion of it but all of it, by clean dissection—and studied by the frozen section method. Then,

if beyond any reasonable doubt the tumor is innocent, the incision may be closed with little or no mutilation of the breast. But, if a small doubt exists as to the malignant character of the tumor, a stained section should be prepared and the diagnosis made by a competent pathologist as early as possible. If further doubt should exist, the radical operation should be performed, because it is better to operate even a pre-cancerous lesion than to operate in the advanced stage of cancer with little hope of a cure.

Whenever cancer can be definitely diagnosed, the question of operability should be determined. The x-ray will aid greatly in ascertaining this fact. Metastases in the lungs, mediastinum, liver and diaphragm render the case hopelessly incurable. Palliative operation sometimes makes the patient more comfortable and, when this can be safely done, is justifiable. Whenever patients who have reached the age of 21 years present themselves with a single tumor in one breast, operation is indicated. The function of the breast is not injured by excision of the tumor and, if the tumor is found to be benign, the patient is protected by the removal of a pre-cancerous lesion. If, on the other hand, the growth proves to be malignant, the radical operation must be performed while the disease is yet local, to produce a cure.

Conclusions

(1) Early recognition and early radical operation in malignant cases produce a higher percentage of cures and a lower percentage of morbidity.

(2) Whenever possible, it is better to operate in the pre-cancerous stage. This will result in practically no mortality or morbidity.

(3) Innocent tumors should be removed in toto by clean dissection. This precludes the probability of cancer development and produces little or no mutilation of the breast.

(4) Every woman who consults her physician about a lump in her breast should be advised and, if necessary, urged to submit to a thorough examination at an early date. The family physician will render his patients a great service by instructing them to report at once any tumor or lump they may discover in the breast.

Correspondence

Smallpox in the Phillippines.

Richmond, June 27, 1922.

To The Editor:

Certain anti-vaccinationists have been circulating in Virginia literature regarding the smallpox situationn in the Philippine Islands. Upon request, the Surgeon-General of the United States Public Health Service, has sent me the following official report on this subject, which I think will be of interest to many doctors of the State who have seen such literature.

E. G. Williams,
State Health Commissioner.

Memorandum for the Surgeon-General.

June 3, 1922.

Relative to Letter of Stanley H. Osborn, Deputy Commissioner of Heaith, Hartford, Conn.

The specific reasons for the appearance of smallpox in the Philippines, as requested by Deputy Commissioner Stanley H. Osborn, are substantially as follows:

Smallpox, which for many years had caused about 40,000 cases per year in the Philippines, was, for all practical purposes, eradicated following the general vaccination which was completed in 1912. There were, however, isolated portions of the islands, such as inaccessible parts of the islands of Samar and Leyte, where cases continued to occur, and certain places in the Moro province, which comprises the island of Mindinao and the islands of the Sulu Archipelago, where, as the inhabitants were all Mohammedans, vaccination could not be practiced unless preceded by a long and extensive campaign of education. In these places then, smallpox still persisted.

In 1916 an increase in varioloid was noted and it was realized that unless prompt vaccination could be again carried out, there was likelihood of another outbreak of smallpox. The matter was taken up with the Insular Government authorities and an appropriation was asked from the Phiippine legislature. The general impression, however, that smallpox had disappeared for good, was so widespread that sufficient appropriations could not

be obtained. Attempts were made to vaccinate as extensively as possible with the limited funds under the control of the Philippine Health Service, but they were insufficient to accomplish the desired result.

With the passage of the Jones bill, which granted practically complete autonomy to the Philippine Islands, a strong desire grew up that all government positions should be filled by the Filipinos and that Americans should be removed. This resulted in considerable resistance to measures instituted by American officials and in failure on the part of Filipino subordinates to carry out instructions given by such officials, also Filipino subordinates failed to co-operate with their American superior officers and report the presence of disease when the same occurred.

The result of the above was that the presence of smallpox in local communities was not reported until its concealment was no longer possible. The first deaths in the community were certified as due to other causes than smallpox. Vaccine issued to provincial and municipal health officials was not used though reported as used. The only portion of the population which could be reached with certainty was the school children, which accounts for the fact that eighty-five per cent. of the cases occurred among children under the age for entering school.

Due to the long period from 1912-1917 in which there had been substantially no smallpox, the vaccine producing facilities of the Bureau of Science had been allowed to deteriorate, with the result that when the rush came they were unable to furnish vaccine of good quality in sufficient quantity to meet the demands. Their supply was supplemented by the importation of about one million units from foreign sources, which had the effect of giving an active vaccine of a different strain from the one that had been used for a number of years.

To illustrate a few specific occurrences, smallpox had existed, as shown by later investigation, in the province of Cavite for practically two months before its presence was reported by the District Health Officer, and had become fairly well disseminated throughout the small towns and villages before its presence was officially known. The health officials of several communities in the vicinity of Manila reported that no smallpox existed in their communities. Within two days after these reports were received, the Director of Health visited these communities and personally made house to house inspections, during the course of which a number of cases of smallpox were discovered. The health official when charged with neglect of duty defended himself by stating that his life would have been endangered if he had reported the presence of the disease. In one instance several thousand units of vaccine that had been reported as used were discovered hidden under papers and similar articles in a closet in the office of a district health official.

When the undersigned resigned as Director of Health, December 31, 1918, Manila and all the surrounding provinces had been freed from smallpox by carefully supervised vaccination, so conducted as to eliminate, as far as possible, the likelihood of false reports or returns. The undersigned informed his successor, a Filipino, that though smallpox had apparently disappeared and that sporadic cases only were being reported, undoubtedly it would be a matter of only a few months until additional outbreaks would occur in hitherto uninvaded provinces unless active vaccination was continued. This advice was not taken, and vaccination was allowed to lag until smallpox made its appearance in epidemic form in these new areas, with the result that 60,612 cases occurred in 1919 as compared with 33,092 in 1918.

To summarize then, the reappearance of smallpox was due to the following facts:

1. Over-confidence on the part of the public and the legislature in the previous general vaccination terminated in 1912.

2. Failure of the legislature to appropriate sufficient funds, even though urgently requested.

3. Lack of co-operation on the part of provincial and municipal health officials, manifested by failure to report the presence of disease in their communities and failure to properly use the vaccine materials supplied them.

4. A general desire to bring about displacement of American officials and their replacement by Filipino officials.

5. Concealment of children under school

age by mothers so that vaccinators were unable to reach and vaccinate them.

6. Partial breakdown of vaccine production facilities due to overconfidence in previous vaccination and shortage of appropriations.

7. Failure to realize after the outbreak in the areas first involved was controlled that the disease would inevitably appear in other areas unless the population was promptly and efficiently vaccinated.

Respectfully submitted,
J. D. Long, *Medical Adviser.*

The Truth About Medicine

Doses Proposed for the United States Pharmacopoeia, Tenth Revision.

The following list represents changes in the U. S. P. IX [Revision], dose or doses for newly admitted substances as proposed for inclusion in the new Pharmacopeia. All other doses remain as at present official. These are submitted for the information of physicians and pharmacists. Any comments should be sent to E. Fullerton Cook, 636 So. Franklin Square, Philadelphia, Pa.

Acidum Benzoicum	1 Gm. (15 grains)
Acidum Citricum	Dose Omitted
Acidum Lacticum	Dose Omitted
Acidum Tartaricum	Dose Omitted
Aconitum	0.06 Gm. (1 grain)
Antimonii et Potassii Tartras	0.003 Gm. (1/20 grain)
Apomorphinae Hydrochloridum	Expectorant, 0.002 (1/30 grain) Emetic, Hypodermic 0.005 Gm. (1/12 gr.)
Asafoetida	0.2 Gm. (3 grains)
Aspidium	Dose Omitted
Atropina	0.0006 Gm. (1/100 grain)
Atropinae Sulphas	0.0006 Gm. (1/100 grain)
Barium Sulphate	No dose
Benzosulphinidum	Dose Omitted
Bismuthi Betanaphtholas	1 Gm. (15 grains)
Bismuthi Subsalicylas	1 Gm. (15 grains)
Bismuthi Subgallas	1 Gm. (15 grains)
Bismuthi Subnitras	1 Gm. (15 grains)
Bismuthi Subcarbonas	1 Gm. (15 grains)
Calcii Chloridum	1 Gm. (15 grains)
Calcii Lactas	1 Gm. (15 grains)
Calumba	1 Gm. (15 grains)
Camphora	By mouth or Hypodermic 0.2 Gm. (3 grains)
Cerii Oxalas	0.6 Gm. (10 grains)
Cubeba	2 Gm. (30 grains)
Colocynthis	0.1 Gm. (1 1/2 grains)
Chrysarobinum	Dose Omitted
Digitalis	0.1 Gm. (1 1/2 grains)
Dakin's Solution	No dose
Dextrose C. P.	No dose
Dichloramin T.—	No dose
Extractum Aconiti	0.015 Gm. (1/4 grain)
Extractum Cannabis	0.015 Gm. (1/4 grain)
Extractum Cascarae Sagradae	0.3 Gm. (1/2 grain)
Extractum Fellis Bovis	0.4 Gm. (6 grains)
Extractum Hyoscyami	0.05 Gm. (5/6 grain)
Extractum Rhei	0.5 Gm. (8 grains)
Extractum Stramonii	0.02 Gm. (1/3 grain)
Fluidextractum Aconiti	0.06 c.c. (1/10 minim)
Fluidextractum Digitalis	0.1 Gm. (1 1/2 minims)
Fluidextractum Ipecacuanhae	Expectorant 0.06 (1 minim) Emetic 1 c.c. (15 minims)
Fluidextractum Lobeliae	0.1 c.c. (1 1/2 minims)
Fluidextractum Nucis Vomicae	0.1 c.c. (1 1/2 minims)
Fluidextractum Podophylli	0.3 c.c. (5 minims)
Fluidextractum Spigeliae	4 c.c. (1 fluidrachm)
Fluidextractum Tritici	8 c.c. (2 fluidrachms)
Fluidextractum Zingiteris	0.5 c.c. (8 minims)
Glyceritum Acidi Tannici	2.5 c.c. (40 minims)
Hexamethylenamina	0.3 Gm. (5 grains)
Hydrargyri Chloridum Corrosivum	0.004 Gm. (1/15 grain)
Hydrargyri Chloridum Mite	Laxative 0.15 Gm. (2 1/2 grains)
Hydrargyri Iodidum Rubrum	0.004 Gm. (1/15 grain)
Hydrargyri Salicylas	Intramuscular 0.06 Gm. 1/10 grain) twice a week
Hyoscyaminae Hydrobromidum	0.0006 Gm. (1/100 grain)
Hyoscyamus	0.2 Gm. (3 grains)
Infusum Digitalis	6 c.c. (1 1/2 fluidrachms)
Infusum Sennae Compositum	30 c.c. (1 fluidounce)
Iodum	0.01 Gm. (1/6 grain)
Ipecacaunha	Expectorant 0.06 Gm. (1 grain) Emetic 1 Gm. (15 grains)
Liquor Sodii Glycerophosphatis	0.6 c.c. (10 minims)
Lobelia	0.1 Gm. (1 1/2 grains)
Magma Magnesiae	Antacid, 4 c.c. (1 fluidrachm) Laxative (for children) 15 c.c. (4 fluidrachms)
Magnesii Carbonas	Antacid 0.6 Gm. (10 grains) Laxative, 8 Gm. (2 fluidrachms)
Magnesii Oxidum	Antacid 0.25 Gm. (4 grains) Laxative 3 Gm. (45 grains)
Magnesii Oxidum Ponderosum	Antacid 0.25 Gm. (4 grains) Laxative 3 Gm. (45 grains)

Massa Hydrargyri	0.3 Gm. (5 grains)
Mistura Glycyrrhizae Composita	4 c.c. (1 fluidrachm)
Morphinae Hydrochloridum	0.01 Gm. (1/6 grain)
Morphine Sulphas	0.01 Gm. (1/6 grain)
Nux Vomica	0.1 Gm. (1 1/2 grains)
Oleoresina Aspidii	Single dose, once a day, 4 Gm. (1 drachm)
Olooresina Capsici	0.015 Gm. (1/4 grain)
Oleum Anisi	0.1 c.c. (1 1/2 minims)
Oleum Aurantii	0.1 c.c. (1 1/2 minims)
Oleum Cari	0.1 c.c. (1 1/2 minims)
Oleum Carophylli	0.1 c.c. (1 1/2 minims)
Oleum Cassiae	0.1 c.c. (1 1/2 minims)
Oleum Chenopodii	1.0 c.c. (15 minims)
Oleum Coriandri	0.1 c.c. (1 1/2 minims)
Oleum Foeniculi	0.1 c.c. (1 1/2 minims)
Oleum Juniperi	0.1 c.c. (1 1/2 minims)
Oleum Lavandulae	0.1 c.c. (1 1/2 minims)
Oleum Limonis	0.1 c.c. (1 1/2 minims)
Oleum Lini	Dose Omitted
Oleum Menthae Piperitae	0.1 c.c. (1 1/2 minims)
Oleum Menthae Viridis	0.1 c.c. (1 1/2 minims)
Oleum Myristicae	0.03 c.c. (1/2 minim)
Oleum Pimentae	0.1 c.c. (1 1/2 minims)
Oleum Rosmarini	0.1 c.c. (1 1/2 minims)
Oleum Sassafras	0.1 c.c. (1 1/2 minims)
Oleum Thymi	0.1 c.c. (1 1/2 minims)
Paraldehydum	4 c.c. (fluidrachm)
Paraformaldehydum	Dose Omitted
Phosphorus	0.0006 Gm. (1/100 grain)
Pilocarpinae Hydrochloridum	0.005 Gm. (1/12 grain)
Pilocarpinae Nitras	0.005 Gm. (1/12 grain)
Potassii Iodidum	0.3 Gm. (5 grains) Antiluetic 2 Gm. (30 grains)
Potassii Nitras	0.3 Gm. (5 grains)
Pulvis Armaticus	0.3 Gm. (5 grains)
Pulvis Ipecacuanhae et Opii	0.3 Gm. (5 grains)
Sanguinaria	0.1 Gm. (1 1/2 grains)
Scopolaminae Hydrobromidum	0.0005 Gm. (1/120 grain)
Senna	2 Gm. (30 grains)
Sodii Benzosulphinidum	Dose Omitted
Sodii Glycerophosphas.	0.3 Gm. (5 grains)
Sodii Iodidum	0.3 Gm. (5 grains): Antiluetic 2 Gm. (30 grains)
Spiritus Anisi	1 Gm. (15 grains)
Spiritus Juniperi	1 c.c.
Spiritus Menthae Piperitae	1 c.c. (15 minims)
Spiritus Menthae Viridis	1 c.c. (15 minims)
Stramonium	0.75 Gm. (12 grains)
Strophanthinum	Daily mouth or vein .0005 Gm. (1/120 grain)
Strychnina	0.002 Gm. (1/30 grain)
Strychninae Nitras	0.002 Gm. (1/30 grain)
Strychninae Sulphas	0.002 Gm. (1/30 grain)
Syrupus Ipecacuanhae	0.75 c.c. (12 minims) Emetic 15 c.c. (4 fluidrachm)
Syrupus Picis Liquidae	10 c.c. (2 1/2 fluidrachms)
Syrupus Pruni Virginianae	10 c.c. (2 1/2 fluidrachms)
Syrupus Sennae	8 c.c. (2 fluidrachms)
Syrupus Tolutanus	10 c.c. (2 1/2 fluidrachms)
Syrupus Zingiberis	10 c.c. (2 1/2 fluidrachms)
Thymol	0.125 Gm. (2 grains) Anthelmintic 2 Gm. (30 grains) divided into 3 doses
Thyroideum Siccum	0.06 Gm. (1 grain)
Tinctura Aconiti	0.6 c.c. (10 minims)
Tinctura Belladonnae	0.6 c.c. (10 minims)
Tinctura Cannabis	1 c.c. (15 minims)
Tinctura Digitalis	1 c.c. (15 minims)
Tinctura Ferri Chloridi	0.7 c.c. (10 minims)
Tinctura Gelsemii	0.3 c.c. (5 minims)
Tinctura Myrrhae	2 c.c. (30 minims)
Tinctura Nucis Vomicae	1 c.c. (15 minims)
Tinctura Opii	0.6 c.c. (10 minims)
Tinctura Opii Deodorati	0.6 c.c. (10 minims)
Tinctura Stramonii	0.75 c.c. (10 minims)
Tinctura Veratri Viridis	1 c.c. (15 minims)
Valeriana	0.75 Gm. (12 grains)
Veratrum Viride	0.1 Gm. (1 1/2 grains)
Zingiber	0.5 Gm. (8 grains)

Proceedings of Societies

Suggestions by the Conference Committee Regarding Training School for Licensed Attendants.

The Committee composed of representatives of the Medical Society of Virginia and the State Nurses' Association met in Dr. Hodges' office on the night of June 2, 1922, to consider the law enacted regarding Licensed Attendants.

The following ideas were agreed upon, which this Committee begs leave to submit to the State Board of Nurse Examiners for the use of any hospital desiring to establish a school for Licensed Attendants. The Committee voted:

(1) To go on record as favoring establishment of schools for Licensed Attendants, and approving the law passed by the recent Legislature.

(2) It recommends that the course be one year, of twelve months, all of which shall be served in the same hospital, at the end of which time, if the work has been satisfactory to the authorities of the hospital, the pupil will receive a certificate as trained attendant, which entitles the graduate to take an examination before the State Board of Nurse Examiners, which, if passed, entitles her to

a certificate of Licensed Attendant.

(3) Schools of this kind to be opened in any hospital of ten beds or more, but recommends that this course be not given in hospitals which are now conducting a successful school for regular trained nurses.

(4) A school of this kind must be supervised by at least one graduate nurse.

(5) Pupils must be between the ages of 18 and 45. giving evidence of good moral character, physically able, and a preliminary education equal to the eighth grade in the public schools.

(6) Classes may be formed twice each year, with one month probation period.

(7) Hospitals to furnish living expenses, uniforms, books and an allowance of not less than $5.00 per month.

(8) This Committee recommends to the physicians of the State of Virginia and the nurses of the State, and the public in general, that the pay for Licensed Attendants be not more than $18.00 per week.

(9) It is recommended that a special uniform be designed and copy-patented, and used throughout all the schools in the State, and used after graduation.

(10) The course of study to include the following:

1—Qualifications, deportment and personal hygiene.
2—General hygiene, care of the home, cleanliness, ventilation, sanitation, disposal of waste, germ theory, household and sick room.
3—Food, care and preparation, plain cooking for the family and the sick.
4—Ethics, etiquette of the sick room, adaptability to sick room and the family.
5—Every day care of the sick: Bed making, lifting, moving, rubbing, special arrangements for comfort, prevention of bed sores, cleansing and sponge baths.
6—Methods of disinfection and sterilization of utensils.
7—Temperature, pulse, respiration, observation of urines, defecations, record keeping, etc.
8—Treatment, enemata, douches, catheterization, fomentations, poultices, etc.
9—Giving of medicines, and instructions regarding antidotes for common poisons.
10—Care and feeding of children, well and ill.
11—Elementary nursing in maternity cases.
12—Special invalid cooking and serving of food.
13—Bandaging.
14—Emergencies, medical and surgical.
15—Text book recommended: Practical Home Nursing by Louise Henderson, R. N., Published by the MacMillan Co., New York City.

J. Allon Hodges, M. D.
Chairman.
R. C. Fravel, M. D.
Sect'y.

Richmond Va.
June 21, 1922.

The Norfolk County Medical Society,

At its annual meeting in June, elected Dr. Julian L. Rawls, Berkley, president; Dr. Chas. W. Doughtie, Norfolk, vice-president; and re-elected Dr. Lockburn B. Scott, Norfolk, secretary-treasurer.

The Southside Virginia Medical Association

Met in Norfolk on Tuesday, June 13th, by special invitation from its members in that city. Dr. T. M. Raines, of Wakefield, presided.

About fifty were in attendance. The subject for general discussion was "Summer Diarrheas of Infants and Children." The program included also a number of other excellent papers. A most enjoyable feature of the meeting was the seashore dinner given by the Norfolk doctors at Ocean Park, after adjournment.

The Association will meet in Victoria, the second Tuesday in September.

R. L. Raiford, *Sect'y.*

Campbell and Roanoke County Societies Exchange Papers.

This spring, it was decided by the Roanoke Academy of Medicine and the Lynchburg and Campbell County Medical Society to annually exchange papers between the two Societies. In March, Dr. Robert Kelly and Dr. B. H.

Kyle, of this city, read papers before the Roanoke Academy of Medicine. On Monday night, June 5th, at a meeting of the Lynchburg and Campbell County Medical Society, Dr. J. D. Willis, of Roanoke, read a very interesting paper on "Signs and Symptons Suggesting Syphilis, Observed in Routine Examinations." Dr. W. W. S. Butler, Jr., of Roanoke, read a very interesting paper on "Some Lesions of the Bladder and Post-Urethra, Case Report: Lantern Slides." We had as guests in addition to Drs. Butler and Willis, Dr. Jos. T. McKinney and Dr. Claude Moore, both of Roanoke.

We feel that the idea of exchanging papers between the two Societies will bring the men of the profession in the two cities in closer contact. The plan, so far, is working well and it is probable that we will exchange these papers more frequently than annually.

J. R. Gorman,
Sec'y-Treas.

The Walter Reed Medical Society

Was organized in Gloucester County, Va., on May 20th, 1921. At this time, 42 physicians residing in the surrounding counties met to decide upon some plan to commemorate the life and character of that noblest of medical minds, Walter Reed. After mature discussion it was decided to organize and maintain a real live medical society to meet at least twice a year. The autumn meeting was held in Newport News in September of 1921 with an attendance of 102. Thus this society has passed from infancy to strong childhood and, while it is one of the best, it bids fair to be also one of the largest, its territory embracing a large portion of Virginia. To quote from the constitution "Licensed white physicians residing in counties adjacent, convenient to and including Gloucester, the birth place of Dr. Walter Reed, are eligible to membership."

The Spring meeting, from all standpoints the most successful, was held in Williamsburg, Va., on May 10th and 11th. The program was of the highest order and thoroughly practical, each paper being discussed. The attendance was the largest in the hostory of the society, representatives from eleven counties being present.

Among the visitors reading papers were Drs. Stuart McGuire, Graham, and Hutcheson, of Richmond, Drs. Hagner and Horgan, of Washington, Dr. Byrnes, of Baltimore, Dr. Beardsley, of Philadelphia, Dr. Payne, of Norfolk, and Dr. Longan, of Newport News, the latter representing the Dental Profession.

Adding to the joy of the occasion were the luncheons given by Dr. George Brown, Superintendent of the Eastern State Hospital, and Dr. J. A. C. Chandler, President of William and Mary College, on Wednesday and Thursday, respectively. An automobile trip to Jamestown Island and points of interest in and about Williamsburg was greatly enjoyed by all participating.

Officers for the ensuing year were elected with the following results—Dr. Rea Parker, of Smithfield, president; Dr. George Brown, of Williamsburg, first vice-president; Dr. E. T. Sandberg, of Cardinal, second vice-president; Dr. William Gwathmey, of Ruark, third vice-president; Dr. George Hankins, of Phoebus, fourth vice-president; Dr. G. L. Fosque, of Onancock, fifth vice-president; Dr. L. E. Stubbs, of Newport News, secretary-treasurer.

The time and place of next meeting was not decided upon, this being left to a committee to be arranged for at a later date.

The incoming president was requested by the members to appoint a committee to confer with the council of the Medical Society of Virginia relative to some form of recognition.

No account of the meeting would be complete without mention of and expression of appreciation of the hearty co-operation of the members of the profession residing in Williamsburg, Drs. Henderson, Brown and King, as well as of the active support of Dr. Chandler, the president of William and Mary College. The success of the meeting was due largely to the help of these men.

L. E. Stubbs,
Sec'y.-Treas.

Secretary's Announcement

Malpractice Insurance.

Many state societies provide malpractice insurance for their members at a cost ranging from four dollars to six dollars annually. The lowest rate quoted in this State now is fifteen dollars with the prospect of an increase this year to twenty-five dollars. This high rate is not so much due to the losses the companies

have suffered in Virginia but to the losses in other states. In the north and west, suits for alleged malpractice are much more common than in the south but policyholders in this section must pay their part of the general average of losses.

Other state societies have found that in offering their members this insurance at cost they have done as much to build up and maintain their organizations as through any other service. Members pay their dues more promptly, new ones are more anxious to join, while old members are careful to see that they do not allow their memberships to lapse. Such a plan for protecting the standing of the members lines up nearly every ethical practitioner in the State for the defense of the physician sued. The advantages briefly listed here are in addition to the large saving effected.

In order to present to the Society reliable statistics, your prompt co-operation is needed. Send to the office of the Medical Society of Virginia a report covering your experience during the past five years, i. e., 1917, 1918, 1919, 1920, and 1921. We want to know exactly what suits and comprises have cost you or your insurance company on your behalf during this period. Include amount of compromises, attorney's fees, court costs, jury awards, and all other expenses incurred. In case you have had not suits or losses of this kind please advise to that effect. It will not be necessary to get out an expensive questionnaire if you will send in the information here requested. A postal card will do.

G. H. WINFREY,
Sec'y.-Treas.

Book Announcements

A Practice of Medicine. By A. A. STEVENS, A. M., M. D., Professor of Applied Therapeutics in the University of Pennsylvania; Professor of Therapeutics and Clinical Medicine in the Woman's Medical College of Pennsylvania, Philadelphia. Octavo of 1,106 pages, illustrated. Philadelphia and London. W. B. Saunders Company. Cloth, $7.50 net.

For over two thousand years the dominant thought in medicine was to find a cure for the various disease processes. The modern ideal—based upon a simplified science—is to seek for and remove the cause and allow the patient to get well.

With a teaching experience of thirty years first in pathology, then in internal medicine, there is probably no man in America better qualified to write a book on practice that should accord with our present state of knowledge than Dr. A. A. Stevens. He is a good judge not only of what should go into a book but also of what should be left out. This new work is modest in its pretentions, practical in its presentations and is a striking record of those incisive methods that have made its author one of the really distinguished teachers of today. It will certainly prove a satisfaction to that large class of Doctors who want a strictly modern one volume book on practice.

H.

Symptoms of Visceral Disease. A Study of the Vegetative Nervous System in Its Relationship to Clinical Medicine. By FRANCIS MARION POTTENGER, A. M., M. D., LL.D., F. A. C. P., Medical Director, Pottenger Sanatorium for Diseases of the Lungs and Throat, Monrovia, Cal., etc. Second Edition. St. Louis. C. V. Mosby Company. Cloth. 357 pages with 86 text illustrations and 10 color plates. 8 vol. Price, $5.50.

Transactions of the American Pediatric Society. 33rd session. Edited by JOSEPH BRENNEMANN, M. D. Volume XXXIII. 386 pages.

Permanent T. B. Clinics.

There are now eight permanent tuberculosis clinics in Virginia, supported in whole, or in part, by the money realized from the sale of tuberculosis Christmas Seals. These clinics, or dispensaries, are in Albemarle, Augusta, Halifax and Wise Counties, and in the cities of Newport News, Norfolk, Petersburg and Portsmouth. Two of these clinics have only been running a short time, Halifax having begun this work March 1st and Albemarle May 1st.

The Virginia Tuberculosis Association receives monthly reports from the clinics and it is stated at their office that since the first of January 2,807 persons have received free examinations through these local dispensaries. Of these 747 were found to have active tuberculosis or to show suspicious symptoms of the disease, while 20 were arrested cases. The local organizations have sent 54 patients to the sanatoriums and, of the remaing 693 active or suspicious cases, 643 are taking home treatment under the supervision of the nurse in charge.

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Editorial

Lymphatics, Lymph and Lymph-Glands.

There is too little present-day consideration of the lymphatic system.* The relation of the lymphatics to the migration in the body of bacteria, and the intimate, but separate, relation of the capillary system of the blood vessels and the terminal formation of lymphatic vessels, and further, the connection between the blood fluid in capillary blood-vessels, the lymph-fluid in the fine endothelial lymph-vessels, and that elaborate but indefinite system of "tissue spaces," lapped with tissue fluids, is a composite question worthy of most careful thought and study. MacCallum, quoted by our authors, preceded by other workers, favors the view that the tissue spaces are not continuous with the lymphatics, but that the lymphatic system is a closed system of lymph channels, as the blood vessels are a closed system of blood channels, both systems sustaining intimate exchange relations to the tissue fluids in the tissue spaces. These authors' summary contains observations which we freely use in this connection. They observe that the lymphatics form a closed system of vessels lined by epithelium; that the term "lymph" should properly be used to designate the fluid found in them; that the tissue spaces are not directly continuous with lymph capillaries. The lymph may or may not be of the same nature as the fluid in the tissue spaces. The lymphatics are more restricted in distribution than the blood vessels and are concerned in the absorption and conveyance of solid particles and substances insoluble in water. For instance, soluble substances enter the blood vessels while insoluble material, like Indian ink or carmine, when injected into the loose connective tissue, spreads through the tissue spaces and "many of the solid particles are eventually carried into the lymphatics in the cytoplasm of cells which pass through the walls of the lymphatics by diapedesis."

Passing through the endothelium of the lymphatic wall in the protoplasm of the white cells, and lodging in the first lymph glands, the "cells carrying solid particles pass from the lymph sinuses of the gland into the lymphoid tissue at the cortex and medulla of the gland and eventually among the lymphocytes in these situations." It is interesting to note that solid particles or even red blood corpuscles coming to the gland from the lymph stream are enmeshed in the reticulum of the lymph sinuses. The lymph gland is thus, it is observed, an extremely efficient filter. It allows solid particles to pass through only when there are too many or when the gland structure is disorganized. So, it is seen that the lymphocytes of the lymphoid tissue act as a mechanical barrier which is eventually made more complete by the formation, as time goes on, of fibroblasts and fibrous tissue. While the foreign material is fixed in the gland, the lymph sinuses are open for the circulation of the lymph.

Bringing the above observations to bear upon the development of tuberculosis in the lymphatic system, our authors say that "the history of the tubercle bacillus in the early stages in the body is identical with that of solid particles such as Indian ink or carmine."

The bacilli enter the lymph stream by the phagocytic cells. They are deposited in the first lymph gland; and there, in the lymphoid tissue, some of the bacilli are destroyed and some, retaining vitality, multiply and produce what is known as a tuberculous focus in

*Observations on the Lymphatics and Lymph Glands, etc. P. T. Herring, M. D., F. R. C. D., Edin., and F. G. MacNaughton, M. D., Edin., D. T. M. & H. From the Physiology Department of the University of St. Andrews. etc.

the lymphatic gland. The action of the lymph gland upon tubercle bacilli results in the liberation of toxins in the lymph-fluid and, in turn, excites an active lymphocytosis "in other glands through which the lymph passes." Preceding tubercle bacilli, toxins, thus, render the uninfected glands "less pervious" by narrowing the lymph sinuses and over-filling them with lymphocytes.

Our readers are referred to the original articles for a more extended dissertation upon the interesting relation of the lymphatics and lymphatic glands in the absorption of foreign particles and tubercle bacilli, to say nothing of the enlightening discussion of other phases of the lymphatic system.

HOW DOCTORS MAY BEST HELP RELIEVE THE SHORTAGE OF NURSES.

"If every physician in the state will look his responsibilities in this matter squarely in the face and attempt to get one of the best educated, best bred and most capable women in his county interested in nursing right away, he will be performing a great public service."—(Ky. Medical Journal.)

Hyperthyroidism.

The doctor of to-day who fails to note the progress that is being made in the study of the functionation of the thyroid gland, particularly in the hypo- and hyper- phases of its activity, is, indeed, permitting one of the most important fields of progressive medicine to escape him. Really, the discovery of late or advanced cases of hyperthyroidism, as displayed in the well-known syndrome called Graves' disease, or the recognition of the signs of the sluggish or absent thyroid function, as evidenced by that dense and gross change in the body, denominated myxoedema, is not at all the sort of conception of the abnormal activity of this gland desired here to be commented upon. But it is of that rather large group of cases standing between the normal and grossly abnormal, we wish to comment upon at this time.*

Over-activity of the thyroid is prone to occur in young women about the time of puberty and during early married life. Whether it is, at this time, more liable to excitation from the association of the newly developing sex glands or the over-stimulation of that group of endocrines by the marriage relation or sexual contacts, or whether it is more liable to be thrown into hyperactivity by infections, food or drink, we do not here attempt to say. But it nevertheless remains true, as a general proposition, that the beginning hyperthyroidism is related to the changes of life as seen in the advent and climacteric of the sex-organs, and there is a large distribution or incidence of hyperthyroidism among the excitable persons daily going about under the classification of high-strung people.

If one were attempting to classify for discussion the type of hyperthyroidism from the simple to the gross and advanced forms, the following may be given: (1) simple hyperthyroidism; (2) toxic adenoma of the thyroid with hyperthyroidism; and (3) exophthalmic goitre or Graves' disease. The occurrence of the third and second groups is recognized by the obtrusive symptoms of struma, tremor, exophthalmos, tachycardia, etc., but the beginning disturbance or disorder of the gland, without appreciable or gross enlargement, is the matter of extra importance, because it is at this time that the state may readily be brought into abeyance and possibly the etiologic factors in the case successfully eliminated.

For this purpose and with a view to this end, it becomes important for physicians to acquaint themselves with the newer lines of investigation that have for their application the early detection of states of over- and under-function of the thyroid gland.

So it is that an early detection of abnormal thyroid activity may be secure by intelligent observations upon the basal metabolism rate. As yet, the accurate determination of the basal metabolism rate is a more or less difficult and intricate process; there is little doubt that, before very long, simplicity will assert itself in the mechanism of this instrument and it will become more quickly accessible to the use of the busy practitioner. For the present, however, cases that indicate the probabilities of hyperthyroidism should be tested out by one skilled in the determination of the basal metabolism, if an early discovery

*A British Medical Association Lecture on "Hyperthyroidism," by George R. Murray, M. D., D. C. L., F. R. C. P., Professor of Systemic Medicine in Victoria University and Senior Physician to the Manchester Royal Infirmary. British Medical Journal, June 10, 1922.

is to be made of that hyperthyroidism which is amenable to simple treatment.

In hyperthyroidism, there is an increased heat production and metabolism. The consumption of the standard body of oxygen and the determination of carbon dioxide production is an index of the basal metabolic rate which is calculated in percentage at, above, or below the average normal rate. For instance, it has been found that in mild cases of myxoedema the basic rate is from —20% to —40% of the normal rate, while in slight cases of over-thyroid activity, the metabolic rate may vary from +20% to plus +40%, and in Graves' disease, the rate may reach from +60% to +100%.

In addition to the detection of this condition, there is a decided advantage to be gotten in the frequent determination of the basal metabolism as an accurate means of estimating the progress of the patient's condition, while in under-treatment. Here for one treating a case of myxoedema with a rate —20% it would be extremely interesting and enlightening, in connection with the improvement of any gross clinical symptoms of the disease, to know by definite measurement and calculation that the gland presiding over the metabolic rate of the body was approaching a normal activity. Likewise, in a case of hyperthyroidism, with an improvement and even disappearance of gross signs of hyperthyroidism, it is extremely helpful to note that the metabolic rate is reduced and is maintained there.

HOW DOCTORS MAY BEST HELP RELIEVE THE SHORTAGE OF NURSES.

"If every physician in the state will look his responsibilities in this matter squarely in the face and attempt to get one of the best educated, best bred and most capable women in his county interested in nursing right away, he will be performing a great public service."—(Ky. Medical Journal.)

U. S. P. Doses Proposed.

The attention of our readers is called to the report of the Sub-Committee on Posology of the United States Pharmacopeia, Tenth Revision, which is found under the heading of The Truth About Medicine, in this issue.

Every physician is interested in the matter of dosage. The use of exactness in dosage and the physiological effect of drugs in the diseased body go hand in hand. The revision of the Pharmacopeia is one of those important ten-year events which should engage the interest of every active practitioner.

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Conference Report on Trained Attendants.

Attention of readers is called to the report of the Conference Committee on one of the important phases of the nurse-situation. This interesting report may be found in this issue in the department of Proceedings of Societies.

Every physician in this State is vitally related to this problem and should give the work of this Committee his serious consideration.

News Notes

University of Va., School of Medicine, Finals.

Commencement exercises of the Medical Department were held in conjunction with those of the various other departments of the University, June 11-13, inclusive. A number of entertainments were enjoyed by the graduates. At the meeting of the General Alumni Association, on the 12th, Drs. W. H. Goodwin, University, and Hugh H. Young, Baltimore, former medical graduates, were named on the executive committee. The annual alumni luncheon was held the same day and that evening President and Mrs. Alderman tendered a reception to the Alumni and graduating classes. The conferring of degrees took place on Tuesday afternoon, following which there was a reception for the graduates and their friends, and later a ball. At class day exercises, a twenty-year endowment life insurance policy for $5,000 was presented to the Univer-

sity of Virginia by the 1922 graduates from all the departments.

There were twenty graduates in medicine, these hailing from seven different states, the District of Columbia, and one from India. This year also had the distinction of having the first woman graduate in the medical department.

The following is a list of the graduates in medicine with hospital appointments:

University of Va. Hospital—Drs. Sara Ruth Dean, Greenwood, Miss.; Isaac Long Harshbarger, Port Republic, Va.; Bayard Taylor Horton, Gate City, Va.; William Jacob Norfleet, Suffolk, Va.; Miles Parker Omohundro, Farmers Fork, Va.; and William Henry Clay White, Elizabeth City, N. C.

St. Luke's Hospital, New York City—Drs. John Throckmorton Bate, Jr., Louisville, Ky., and Charles Bruce Morton, Alexandria, Va.

Church Home Infirmary, Baltimore—Drs. Albert Austin Pearre, Frederick, Md., and Louis Joseph Richman, Newport News, Va.

Sarah Leigh Hospital, Norfolk, Va.—Dr. Walter Paul Adams, Norfolk, Va.

Chester Hospital, Chester, Pa.—Dr. Estes Caskie Kidd, Lovingston, Va.

General Hospital, Madras, India—Dr. Arthur Gronan Noehren, Madras, India.

Mass. General Hospital, Boston—Dr. Edward Jacob Ottenheimer, Willimantic, Conn.

Johns Hopkins Hospital, Baltimore—Dr. Alfred Rives Shands, Jr., Washington, D. C.

Orange Memorial Hospital, Orange, N. J. —Dr. Floyd Reeves Smith, University, Va.

U. S. Marine Hospital, New Orleans, La. —Dr. Robt. Glass Vance, Jr., Waynesborro, Va.

Dr. Russell Watson Roberts, Faber, Va., accepted no appointment at this time.

Dr. Charles Calhoun Hedges, Marietta, Ga., was appointed instructor in Anatomy at the University of Virginia; and Dr. Frank Helvestine, Jr., Roanoke, Va., was appointed instructor in Pathology, at the University of Virginia.

Medical Society of Virginia.

The Executive Council of the Society met in June and decided that the Norfolk meeting of the Medical Society of Virginia should be held October 31 to November 3, inclusive. Dr. R. Lloyd Williams, 405 Taylor Building, Norfolk, is chairman of the Local Committee of Arrangements.

Now is the time to begin planning attendance upon this meeting and to decide about the reading of papers. Norfolk doctors wish to make this the "biggest meeting" ever.

Public Health School at Harvard.

It is announced that a new school of Public Health is to be opened at Harvard University in September. It is the outgrowth and continuation of the school which has been jointly conducted by Harvard and the Massachusetts Institute of Technology since 1913, and will be closely associated with the Medical School of Harvard. Dr. David L. Edsall, dean of Harvard Medical School, will also serve as dean of this Public Health school, and the faculty is composed of representative men.

Dr. and Mrs. Beverley R. Tucker,

Richmond, enjoyed a visit to some of the principal Canadian cities, when he attended the American Psychiatric Association in June.

Dr. Henry M. Snead

And family, of South Hill, Va., recently paid a visit at the home of his mother at Fork Union, Va.

Lockley P. Hening Hurt.

As we go to press, we are informed that there is a slight improvement in the condition of Lockley P. Hening, son of Dr. Thos. S. Hening, of Jefferson, Va. Mr. Hening, who is a senior student at the Medical College of Virginia, was injured in a saw mill accident near his home about the middle of June.

Honor for Dr. Gwathmey.

At a dinner in his honor, by the American Association of Anesthetists, in St. Louis, last month, Dr. James Tayloe Gwathmey, of New York City, was presented with a silver loving cup, in recognition of his services for the past ten years for advances in the research, practice and literature of anesthesia.

Medical Arts Building

Is the name to be given to the new physicians' building, shortly to be erected on Franklin Street, this city. Possession of the property will be obtained about August 1, and construction will be commenced at once. Drs. Karl Blackwell, L. T. Stoneburner, R. H.

Wright and E. H. Terrell, all of Richmond, are the incorporators of this project.

Miss Celia Brian, R. N., Honored.

Miss Celia Brian, for the past twelve years superintendent of the Danville, Va., General Hospital, has tendered her resignation to accept the superintendency of a large hospital in Vermont, her native State. Just before leaving, the ladies' society working for the hospital, presented her with a silver loving cup.

Dr. George B. Fadeley,

East Falls Church, Va., has been elected one of the trustees of the Leeway Citizen's Association, of Arlington County, Va., which has voted to purchase a lot and erect a new community building.

Dr. and Mrs. L. F. Hansbrough

Have returned to their home in Front Royal, Va., after a visit to Baltimore.

Dr. W. A. Plecker,

State Registrar, in June visited his former home at South Hill, Va., after an absence of ten years.

Dr. J. M. Shackelford,

Of Martinsville, Va., visited this city, early in June.

Dr. Powell Garland Dillard,

Of the class of '20, University of Virginia, Medical School, who is house surgeon at Post-Graduate Hospital, New York, has recently been on a visit to his former home in Lynchburg, Va.

The Virginia Pharmaceutical Association,

At its annual meeting at Natural Bridge, in June, elected H. E. Orchard, Lynchburg, president, and A. L. I. Winne, Richmond, secretary.

Dr. D. R. Murchisonn,

Who, for several years, has been located in Richmond, has moved to Wilmington, N. C., where he will continue the practice of his profession.

Dr. Bruce Clark

Has moved from Pulaski County, Va., to Winifrede, W. Va.

Dr. Percy Harris,

Who was recently appointed City Physician for Lynchburg, Va., resigned the position and decided to remain at Scottsville, Va.

Dr. Dean B. Cole,

Formerly of this city, after a short time at Chilhowie, Va., has gone to Trudeau, N. Y.

Dr. Chas. W. Putney,

Of the class of '21, Medical College of Virginia, has returned to Richmond, after a year at Grace Hospital, New Haven, Conn. He is at 206 N. Allen Avenue.

Dr. George W. Parrott,

Of Charlottesville, Va., was a recent visitor at his former home, Fork Union, Va.

Czechoslovak Hospital for Chicago.

At a recent meeting in Chicago of American citizens of Czechoslovak descent, plans were laid for the erection of a Czechoslovak hospital. For this purpose, $30,000 has already been collected and a considerably larger sum pledged. The purpose is to provide a hospital where Czechoslovakians may have the advantage of attention from doctors and nurses who understand and speak their own language.

Tonsil and Adenoid Clinics.

Four Tonsil and Adenoid Clinics have been held in Southampton County, Va., this spring, one each at Courtland, Boykins, Sedley and Franklin. One hundred and fifty-four patients were operated on at theese clinics, all of whom showed beneficial results. Over sixty per cent of the school children were found to have defective tonsils or adenoids. The clinics were held under the auspices of the county branch of the Red Cross, the Southampton County Medical Society, and various local organizations. The operating surgeon was Dr. J. B. Rawlings, formerly of Staunton, but now with the State Board of Health. He was assisted by Dr. R. L. Raiford, of Sedley, and two trained nurses. Other local physicians were in constant attendance.

Married.

Dr. John Kirk Richardson and Miss Irene Trotter Geisinger, both of Richmond, Va., June 12.

Dr. Austin Ingram Dodson, Richmond, and Miss Louise Barham, Emporia, Va., June 6.

Dr. Carlisle Callahan Cochran, Huntersville, N. C., and Miss Adelia John Everette, June 6. Dr. Cochran graduated from the Medical College of Virginia last year, at which time he was appointed an interne to Virginia Hospital, Richmond. They will make their home in this city.

Dr. James Alexander Waddell, University, Va., and Miss Mary C. Graves, Somerset, Va., June 27.

Dr. Parks M. King, Charlotte, N. C., and Miss Anna Howerton, Lexington, Va., June 27.

Commission on Mental Health.

Governor Trinkle has appointed the following as members of the Commission on Mental Health, which commission was created by an act of the last General Assembly:—Dr. S. C. Hatcher, Ashland, chairman; Frank Bane, Richmond, secretary; Dr. Thomas S. Hening, Jefferson; Dr. W. D. Prince, Stony Creek; Charles A. Osborne, Richmond; Dr. W. F. Drewry, Petersburg; Dr. A. S. Priddy, Colony; Dr. Ennion G. Williams, Richmond; Harris Hart, Richmond; Dr. Paul V. Anderson, Richmond; and Miss Annie Mann, Petersburg.

Dr. I. S. Stone,

Of Washington, D. C., is visiting various points of interest in the Pacific States. He is accompanied by his family and will return home about August the 1st.

Drs. Deaver and Marshall Retire.

It is announced that Dr. John B. Deaver and Dr. John Marshall will retire this summer from the teaching staff of the University of Pennsylvania, owing to age limitations. In this institution, retirement from the teaching staff is optional between the ages of 65 and 68 and compulsory at 68. Both of these physicians have been associated with the University for more than forty years, Dr. Deaver as John Rhea Barton professor of surgery, and Dr. Marshall as professor of toxicology and chemistry.

Dr. E. S. Lester,

Of Witt, Va., has been appointed an examining physician by the Norfolk and Western Railway, and has moved to Bluefield, W. Va.

Dr. W. M. Minor,

Of Comorn, Va., has been elected president of the Board of Directors of the Bank of King George, Va.

Dr. A. C. Lancaster

Has been elected a member of the City Council of Martinsville, Va.

Dr. Stuart McGuire,

Richmond, was one of the five men appointed by the Governor, to complete the personnel of the new war memorial commission, created by terms of a resolution adopted during last session of the General Assembly.

Dr. Robert P. Kelly,

Lynchburg, Va., announces that in the future his practice will be limited to obstetrics. His offices are at 705 Church Street.

To Work for Welfare of Mothers and Children.

Dr. Ethel M. Watters, of San Francisco, has been appointed consultant in the administration of the Sheppard-Towner Maternity Act. Since 1919, she has been Director of the Bureau of Child Hygiene in the California State Board of Health, and is a well-known pediatrician. Dr. Watters becomes a member of the staff of the Federal Children's Bureau, which is charged with the duty of administering in co-operation with the States the Federal funds appropriated for promoting the welfare and hygiene of maternity and infancy.

All but six of the States have to date accepted the provisions of the act. In most States the administration will be in charge of the child hygiene divisions of the State boards of health. Plans under which the individual States will administer the funds locally vary with local needs and resources.

Annual Physical Examinations Urged.

Dr. Herman M. Biggs, Commissioner of Health of New York State, in opening the joint annual conference of Sanitary Officers and Public Health Nurses of New York, urged an annual physical examination of every man, woman and child in the State as a health measure of the first importance. He further called attention to the fact that "the unselfish devotion of the doctor as health officer to the higher good of the community which he serves" has not received the recognition it should.

Doctors Interested in County T. B. Work.

A number of tuberculosis associations are being organized in counties throughout Virginia and active interest is being shown in their work.

Dr. Rea Parker, Smithfied, has been elected chairman of the association in Isle of Wight County and Dr. Clarence M. Nicholson, of Charlotte C. H., of the one in Charlotte County.

The U. S. Civil Service Commission,

Washington, D. C., announces open competitive examination August 9, 1922, for junior microanalyst. Any one interested may secure further information from the Commission.

Location Wanted

Protestant graduate of Medical College of Virginia in 1907, aged 40, who has been doing industrial work since graduation, wants a location in Virginia, in some good small town. Must be in a good community, with good schools and good roads. Will not object to doing some rural work on good roads and among a good class of people. Available about September 1st. Address No. 154, care this journal. (Adv.)

Wanted—

A doctor to locate in a small town about .5 miles from Richmond. Will guarantee at least $150 a month. For information, address P. O. Box 395, Richmond, Va.

Obituary

Resolutions on Death of Dr. Taylor.

The following preamble and resolutions were adopted at a meeting of the Richmond Academy of Medicine and Surgery held on the 13th ultimo.

WHEREAS, The Richmond Academy of Medicine and Surgery has learned of the death on May 30, 1922, of Dr. Hugh McGuire Taylor, who was for many years one of its most active members and at one time its President, and,

WHEREAS, In the passing of Dr. Taylor there has been removed from its midst one of the ablest surgeons the medical profession of Richmond has known, —a wise counsellor, a true friend, and a Christian gentleman of the highest type, be it

RESOLVED, That the Richmond Academy of Medicine and Surgery bows to the will of an all-wise Providence, but expresses its profound sorrow at the loss it has sustained, and, be it further

RESOLVED, That these resolutions be spread upon the minutes, that a copy be forwarded to the bereaved family, and that they be published in the VIRGINIA MEDICAL MONTHLY.

ALFRED L. GRAY, *Chairman*
VIRGINIA HARRISON
E. H. TERRELL.

Dr. Reuben Lindsay Robertson,

Of Charlottesville, Va., died at his home in that city, June 5, aged 62 years. Upon completing his academic education at Virginia Military Institute, he entered the University of Virginia, from which he graduated in medicine in 1882. He at once entered the medical branch of the U. S. Army, and saw service in various sections of the country for a period of over twenty years. At the time of his death, he was city physician of Charlottesville, a position which he had held for several terms. His wife and six children survive him.

Dr. William Logan Dunn,

Of Glade Spring, Va., a prominent physician of Southwest Virginia, died at his home June 26, at the age of 84 years. Dr. Dunn received his academic education at Emory and Henry College and graduated in medicine from the Medical College of Virginia in 1863. He enlisted in the Confederate service during the War Between the States as a private and later performed medical services. Immediately after the war, Dr. Dunn located at Glade Spring and continued actively at work there until about six months ago. He joined the Medical Society of Virginia in 1874 and became an honorary member in 1906. For more than forty years he was one of the local surgeons of the Norfolk and Western Railway. He was twice married and is survived by his last wife. The funeral was conducted with Masonic honors.

Dr. Sampy Davis Hatfield.

Formerly of Iaeger, W. Va., but for the past year located in Kokomo, Ind., died June 2, from a bullet wound, accidentally inflicted by the revolver of a police officer, who was in his office professionally. The policeman reached over to pick up something which had fallen to the floor when his revolver fell out of his pocket and discharged its contents in the left side of the physician, just above the hip. Dr. Hatfield was 41 years of age and was graduated from the Louisville Medical College in 1906. H ewas a member of a number of medical societies and fraternal organizations.